



**US Army Corps  
of Engineers**  
Waterways Experiment  
Station

Contract Report HL-94-1  
April 1994

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*Improvement of Operations and Management Techniques Research Program*

**Corps of Engineers Operations  
and Maintenance Budget Decision Support  
System (COMB\_DSS): System Concept,  
Design, and Prototype Evaluation  
Volume II: Appendixes B Through G**

by *Craig A. Strus, Russ E. Robinson*  
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and Maintenance Budget Decision Support  
System (COMB\_DSS): System Concept,  
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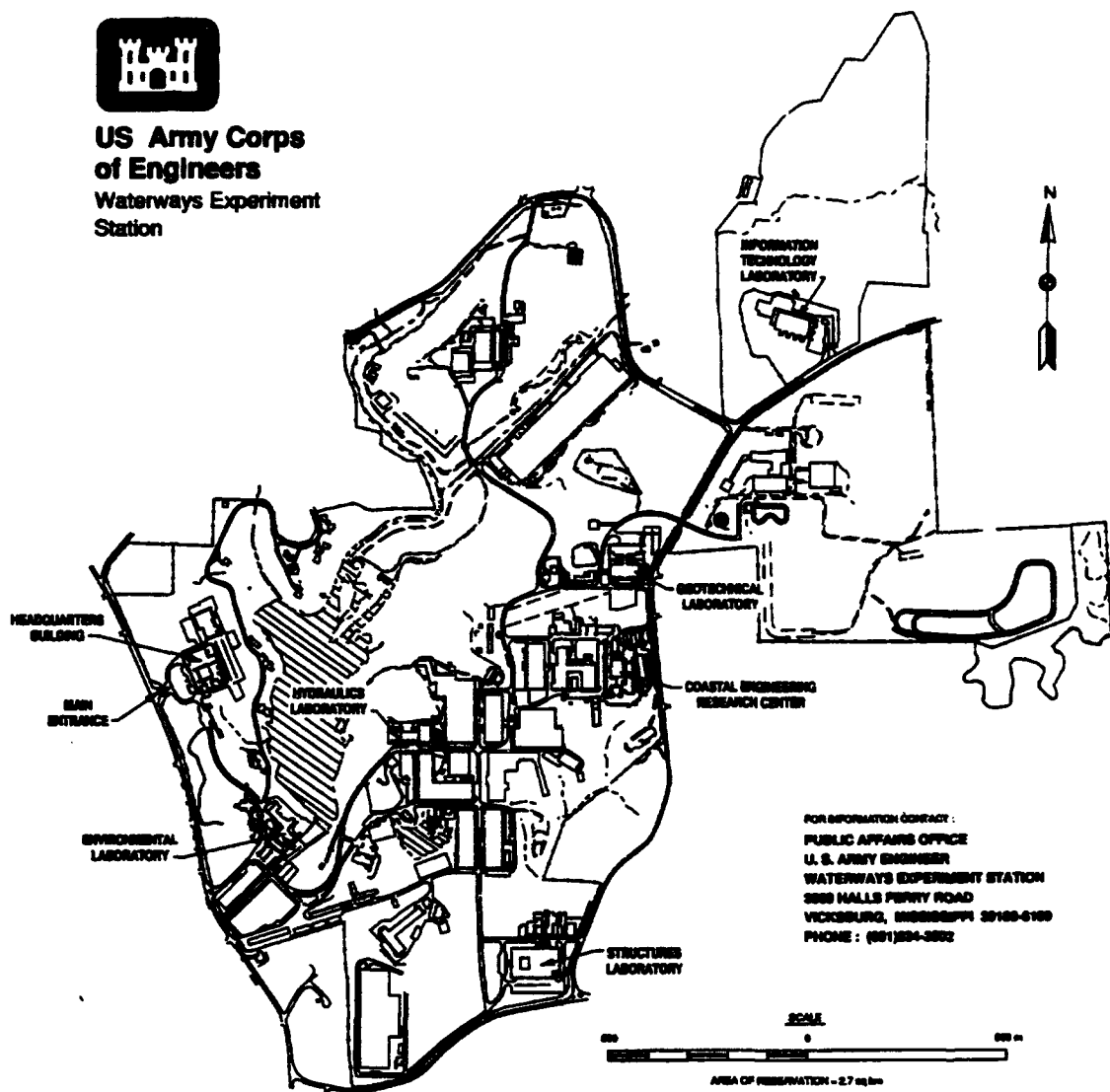
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**US Army Corps  
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# Appendix B

## Micro-ABS/ Mainframe ABS

### Data Dictionary and Reports

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Availability Codes	
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## Micro-ABS/Mainframe ABS Data Dictionary

Following is a complete list of all data elements (fields) contained in the nine micro-ABS database files. A field name may be up to ten characters long and is of type character, numeric, date, logical, or memo. Lengths for each field are also supplied, as well as any decimal places for numeric fields. Fields that are not numeric will always have a DEC length of zero.

Filename : CATFEAT.DBF  
Memo File? : No  
Last Update : 09/21/89  
Records : 120

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CATCODE	Character	3	0
002	CATDESC	Character	70	0
003	FEATCODE	Character	5	0
004	FEATCAT	Character	12	0
005	FEATDESC	Character	36	0

Total Record Length: 127 Bytes

Filename : CATEXC.DBF  
Memo File? : No  
Last Update : 03/02/89  
Records : 25

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CATCODE	Character	3	0

Record Length: 4 Bytes

Filename : CE\_COST.DBF  
Memo File? : No  
Last Update : 05/07/91  
Records : 1

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	YEAR	Numeric	2	0
002	CWIS	Numeric	5	0
003	FUNCID	Numeric	4	0
004	CE_FIELD	Character	10	0
005	BREAK_FLD	Character	10	0
006	BREAK_COST	Numeric	8	0

Record Length: 40 Bytes

Filename : NAV\_DET.DBF  
Memo File? : No  
Last Update : 05/20/91  
Records : 4

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CWIS	Numeric	5	0
002	REACH	Numeric	4	0
003	REACHTYPE	Character	1	0
004	REACHDESC	Character	64	0
005	HISTDEPTH	Numeric	4	0
006	HISTWIDTH	Numeric	4	0
007	BYDEPTH	Numeric	4	0
008	BYWIDTH	Numeric	4	0
009	PLANDPTH	Numeric	4	0
010	PLANWIDTH	Numeric	4	0
011	AUTHDEPTH	Numeric	4	0
012	AUTHWIDTH	Numeric	4	0
013	TONNAGE	Numeric	8	0
014	SELFPROPEL	Numeric	8	0
015	NONSELFPRO	Numeric	8	0
016	SLIPS	Numeric	8	0
017	PASSENGERS	Numeric	8	0
018	LAUNCHINGS	Numeric	8	0
019	TONMILES	Numeric	8	0
020	CRAFTVALUE	Numeric	8	0
021	INTEREST	Character	1	0
022	POLITICIAN	Character	64	0
023	REMARKS	Character	64	0
024	DRAFT	Numeric	4	0
025	TRIPS	Numeric	8	0
026	CUYDREDBY1	Numeric	8	0
027	CSTDREDBY1	Numeric	8	0
028	CUYDREDBY3	Numeric	8	0
029	CSTDREDBY3	Numeric	8	0
030	CUYDREDBY4	Numeric	8	0
031	CSTDREDBY4	Numeric	8	0
032	APPROP	Character	1	0
033	EROC	Character	2	0

Record Length: 363 Bytes

Filename : NAV\_PWW.DBF  
 Memo File? : No  
 Last Update : 05/15/91  
 Records : 4

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CWIS	Numeric	5	0
002	REACH	Numeric	4	0
003	WWCODE	Numeric	4	0
004	PORTCODE1	Numeric	5	0
005	PORTCODE2	Numeric	5	0

Record Length: 24 Bytes

Filename : ORGFILE.DBF  
 Memo File? : No  
 Last Update : 05/06/91  
 Records : 2

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	ORGCODE	Character	4	0
002	ORGDESC	Character	36	0
003	PCNUM	Numeric	2	0
004	NUMREC	Numeric	4	0

Record Length: 47 Bytes

Filename : PRJFILE.DBF  
 Memo File? : No  
 Last Update : 10/02/91  
 Records : 47

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CWIS	Numeric	5	0
002	PRJNAME	Character	48	0
003	STATE	Character	2	0
004	PRJCLASS	Character	2	0
005	EROC	Character	3	0
006	SURVEYS	Numeric	4	0
007	TENYRAVE	Numeric	8	0
008	APPROP	Character	1	0
009	WETSLIPS	Numeric	4	0
010	DRYSTORE	Numeric	4	0
011	INTERCODE	Character	1	0
012	POLITICIAN	Character	40	0

Record Length: 123 Bytes

Filename : STATEFIL.DBF  
 Memo File? : No  
 Last Update : 03/25/87  
 Records : 55

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	STATE	Character	2	0
002	STATEDESC	Character	14	0

Record Length: 17 Bytes

Filename : WRKFILE.DBF  
 Memo File? : No  
 Last Update : 10/01/91  
 Records : 66

<u>Field</u>	<u>Name</u>	<u>Type</u>	<u>Len</u>	<u>Dec</u>
001	CWIS	Numeric	5	0
002	FUNCID	Numeric	4	0
003	PRJRANK	Numeric	4	0
004	PRJNAME	Character	48	0
005	FUNDLEVE	Character	1	0
006	CATCODE	Character	3	0
007	TOTALCOST	Numeric	8	0
008	ORGCODE	Character	4	0
009	DESCWORK	Character	56	0
010	COFMARID	Numeric	6	0
011	FUNDARG1	Character	64	0
012	FUNDARG2	Character	64	0
013	FEATCODE	Character	5	0
014	CONTRACTS	Numeric	8	0
015	DIRLABOR	Numeric	8	0
016	OTHER	Numeric	8	0
017	EDCONTRACT	Numeric	8	0
018	EDCORPS	Numeric	8	0
019	SACONTRACT	Numeric	8	0
020	SACORPS	Numeric	8	0
021	DREDCUYD	Numeric	8	0
022	TYPEDRED	Character	2	0
023	MAINTCSTSV	Numeric	8	0
024	VALCONTCTR	Numeric	8	0
025	CUMRCNSTCD	Character	1	0
026	DISTRANK	Numeric	4	0
027	OUTMEASURE	Numeric	8	0
028	YEAR	Numeric	2	0
029	REACH	Numeric	4	0
030	INSPECCODE	Character	7	0
031	ADPWRKCODE	Character	15	0
032	ADVDATE	Date	8	0
033	BIDDATE	Date	8	0
034	OPERACCT	Character	1	0

035	DISTFLAG	Numeric	2	0
036	UPFLAG	Character	1	0
037	NUMFUND	Numeric	1	0
038	APPROP	Character	1	0
039	EROC	Character	2	0

Record Length: 420 Bytes

Following is a more detailed description of individual data elements (fields). Data must be entered in fields that are denoted as "mandatory." The following field descriptions are generic to explain fields in mainframe ABS, as well as the abbreviated 1 - 10 character field names as listed above for micro-ABS.

## Project Level Data Element Definitions

The following alphabetized definitions define data elements used at the project level. References to marginal navigation projects mean those projects whose work functions must be placed in funding Level 3 or 4.

- **BENEFIT-COST RATIO** - The benefit-cost ratio for the project. It will appear on the WCC computer with the decimal point (e.g., 3.1).
- **COMMERCIAL TONNAGE ON NAVIGATION REACH** (derived from Waterborne Commerce Statistics database) - A decimal number representing the amount of commercial tonnage - in thousands of dollars - that moved within the navigation reach within the prior calendar year i.e., if the navigation reach is to be dredged in fiscal year 1991, the prior calendar year for reporting will be 1987.
- **CWIS** (mandatory for all projects) - 5 digit CWIS number for the project.
- **NAVIGATION REACH INTEREST CODE** (required for shallow draft and minor draft navigation reaches only) - A one letter code indicating special interest groups concerned with the maintenance of the reach:

<u>CODE</u>	<u>TITLE</u>
M	Military Installation
C	Coast Guard Station
P	Political Interest

- **NUMBER OF PASSENGERS CARRIED ON NAVIGATION REACH** (derived from Waterborne Commerce Statistics database) - An 8 digit integer representing the number of passengers carried by vessels moving on the navigation reach within the prior calendar year i.e., if the navigation reach is to be dredged in fiscal year 1991, the prior calendar year for reporting will be 1987.

- **NUMBER OF PROJECT CONDITION SURVEYS** (mandatory for project condition survey projects) - The number of sediment condition surveys to be conducted within the budget year as part of the project condition surveys activity. Number of project condition surveys is entered as an integer under both systems.
- **POLITICIANS INTERESTED IN NAVIGATION REACH** (required for shallow draft and minor deep draft navigation reaches only if interest code is "P") - A 64 character entry indicating the names of Senators, Congressmen and other elected officials interested in the maintenance of the navigation reach.
- **PROJECT NAME** (mandatory for new navigation projects) - the authorized project name for the project.
- **STATE** (mandatory for new navigation projects) - 2 letter state code representing the state in which the project is located.
- **TEN YEAR AVERAGE MAINTENANCE COST PER TON** (mandatory for marginal navigation projects) - the ten-year average maintenance cost per ton for the project. It will appear on the WCC computer with the decimal point (e.g., 1.5).

## Work Function Level Definitions

Definitions for work function data required for budget submission.

- **ADP WORK CODE** (optional) - The COEMIS ADP Work-code for the activity represented by the work function.
- **CATEGORY CODE** (mandatory) - the 3-letter code corresponding to the category of work to which the function belongs. Categories of work are determined from the Performance Level Matrix published in the budget EC. The Performance Matrix also lists the 3-letter codes assigned to each category of work.
- **COFMAR ID** - The Catalog of Maintenance and Repair (COFMAR) identifier if the work function has been identified by CECA-OM as being part of COFMAR during a previous budget cycle. It is comprised of the last two digits of the budget year in which the work function became part of COFMAR concatenated with the WORK FUNCTION ID of the work function.
- **CONTINUING CONTRACT** - For budget year work functions involving contracts which will extend beyond the BY, enter the dollar value (in thousands of dollars) of only that portion of the contract which extends into BY + 1, BY +2, etc. For example, a two year contract is to be awarded mid-BY at an estimated cost of \$200,000. That portion which

extends into the out-years is \$150,000. The continuing cost, therefore, is \$150,000.

- **CONTRACT ADVERTISEMENT DATE** (mandatory for all prior budget year work functions with contract costs greater than \$100,000) - The data that the contract will be advertised in the Commerce Business Daily.
- **CONTRACT BID OPENING DATE** (mandatory for all prior budget year work functions with contract costs greater than \$100,000) - The date that bids will be accepted for the contract.
- **CONTRACT COST** - The cost estimate for work performed by non-Corps Government agencies or contractors. This includes the cost of contractor-furnished material, plant and supplies. This entry will not contain any supervision and administration or engineering and design costs for work performed by non-Corps entities.
- **CONTRACT ENGINEERING AND DESIGN COSTS** - The cost estimate for any engineering and design work (normally entered under feature cost 34) performed by non-Corps government agencies or by contract.
- **CONTRACT SUPERVISION AND ADMINISTRATION COSTS** - The cost estimate for any supervision and administration work (normally entered under feature cost codes 19 and 35) performed by non-Corps agencies or by contract.
- **CONSTRAINT** (mandatory for FUNDING LEVEL 9 COFMAR work functions) - Some work functions that are part of the Catalog of Maintenance and Repair (COFMAR) and that have been placed in funding Level 9 have certain legal or environmental restrictions preventing their being performed. Enter one of the following codes to indicate whether or not a constraint exists:  

Y	Constraints exist
N	Constraints do not exist
- **CORPS ENGINEERING AND DESIGN COSTS** - The cost estimate for any engineering and design work (normally entered under feature cost codes 34) performed by Corps personnel.
- **CORPS SUPERVISION AND ADMINISTRATION COSTS** - The cost estimate for any supervision and administration work (normally entered under feature cost codes 19, 35, and 16.2) performed by Corps personnel.
- **CUBIC YARDS DREDGED** (mandatory for the dredging work functions with categories D01 and F05 categories) - The estimated number of

cubic yards of material that will be dredged on the navigation reach represented by the work function.

- **CWIS number (mandatory)** - the CWIS number of the project in which the work function is to be performed. This CWIS number must exist in the project file on the database.

- **DESCRIPTION OF WORK FUNCTION (mandatory)** - A concise description of the work to be accomplished in the work function. This should not be a reiteration of the work function category description. Rather, it should provide, whenever possible, information on the location and/or quantity of work. Examples of good descriptions are as follows:

Major structural repairs to lower mitergate-Meldahl  
Operate Meldahl lock 3 shifts 24 hrs./day, 7 days/week

Navigation project work function descriptions should identify the segment to which the work function belongs. Engineering and design work for work to be accomplished in the fiscal year following budget year should be so indicated in the DESCRIPTION OF WORK FUNCTION FIELD e.g., "P&S for dredging Anahuac Channel in BY + 1". The cost breakout for this work will be entered under CORPS E&D or CONTRACT E&D.

- **DIRECT LABOR COSTS** - The cost estimate for all Corps hired labor costs paid from project funds with the exception of District overhead costs for supervision and administration or engineering and design. It includes technical indirect labor costs chargeable to a specific feature cost code (except feature cost codes 19, 35, and 34).

- **FEATURE COST CODE (mandatory)** - The feature cost code corresponding to the work function category code (see the Performance Level Matrix). This is the feature cost code which best classifies the work function. Feature cost codes 19, 35, and 34 are not allowed in this block.

- **FUNDING ARGUMENT** (optional for prior year and budget year work functions with categories E06, E10, E13, E20, F01, F02, H01, H03, M02, M02, N01, P01, S02, S04, X01, X02, X03, X04, and X05) - Two 64 character entries explaining the reason for funding the work function. For Level 1 work functions, these entries will consist of a list of the various work items or tasks that comprise the work function. For lower level work functions, these entries will consist of a concise argument that either explains the adverse impacts of not funding the work function or the added benefits of funding it. The funding argument should parallel the rationale contained in the Performance Level Matrix, but contain specific descriptions of any impacts or benefits.

- **FUNDING LEVEL (mandatory)** - A one-position code which represents the funding level in which the work function is to be placed. To determine what funding level is appropriate, refer to the Performance Level Matrix in the budget EC and correspondence from CECW-OM.

- **INSPECTION CODE** (mandatory for budget year work functions with categories E06 or E20) - A seven character code giving information about periodic inspections. The structure is as follows:

<u>CHARACTER</u>	<u>CODE</u>	<u>EXPLANATION</u>
1st	B	Bridge Structure
	O	Other Type of Structure
2nd	H	High Travel Costs
	L	Low Travel Costs
3rd	D	De-watering of Lock Required
	N	No De-watering Required
4th-5th		Last two digits of last year that structure was inspected
6th-7th		Last two digits of year of inspection prior to last inspection

- **MAINTENANCE COST SAVINGS** - For work functions in funding Levels 3 and 4 which involve significant maintenance activity, enter the estimated dollar increase (in thousands of dollars) of the real (non-inflated) cost of implementing a deferrable maintenance function if the function is delayed for 1 year. For example, a paved road with small cracks that are left unattended for a year may develop potholes after a freeze-thaw cycle. The real cost of repair would increase because of the accelerated deterioration.

- **NAVIGATION REACH IDENTIFIER** - a 4-digit code uniquely identifying the navigation reach on which the dredging activity represented by the work function is to be performed. A record with this same navigation reach identifier should also be present in the navigation information file.

- **NUMBER OF EMPLOYEES EXAMINED** (mandatory for budget year work functions with category S05) - The number of Occupational Safety and Health Act medical examinations to be performed if the work function is funded.

- **NUMBER OF PROJECTS INSPECTED** (mandatory for budget year work functions with category E13) - The number of non-federal flood control projects to be inspected as part of the Inspection of Completed Works or Inspection of Non-Federal Levees program if the work function is funded. This entry is made under OUTPUT MEASURE.

- **NUMBER OF REAL ESTATE INSPECTIONS** (mandatory for budget year work functions with category P01) - The number of real estate inspections to be performed if the work function is funded. This entry is made under OUTPUT MEASURE.

- **ORGANIZATION CODE** - An alphanumeric code corresponding to the District organizational element performing the work function. This code is for the District's use and is not required by CECW-OM. Therefore, if you

want to use this data element you may devise any system of codes which meets your needs. We recommend use of this data element for keeping track of each organization element's portion of the O&M, General budget.

- **OTHER COSTS** - The costs estimate for materials and supplies and all other expenses needed to support the in-house effort except those associated with the pay of government personnel. It includes any non-hired labor technical indirect costs chargeable to a specific feature cost code (except feature cost codes 19, 35, and 34).

- **PROJECT NAME** (mandatory) - The authorized project name of the project in which the work function is to be performed. Project name entries do not have to agree on work function records within the same project.

- **RANK IN PROJECT** (mandatory) - The priority assigned to the work function within the project to which it belongs.

- **TOTAL COST OF WORK FUNCTION** (mandatory) - The total cost of the work function.

- **TYPE OR DREDGE** (mandatory for the dredging work functions with categories D01 and F05) - A two letter code indicating the class of dredge to be used on the dredging activity represented by the work function:

**CODE TYPE OF DREDGE**

HS	Corps Hopper dredge, small class (less than 2,000 cy)
HM	Corps Hopper dredge, medium class (2,000-6,000 cy)
HL	Corps Hopper dredge, large class (over 6,000 cy)
SC	Corps sidecaster dredge
AL	All other Corps dredges
CA	Non-Hopper contract dredge
CS	Contract Hopper dredge, small class (less than 2,000 cy)
CM	Contract Hopper dredge, medium class (2,000-6,000 cy)
CL	Contract Hopper dredge, large class (over 6,000 cy)

- **WORK FUNCTION ID** (mandatory) - A 1 to 4 digit number that uniquely identifies the work function within the project. This entry cannot be changed after the work function record has been entered into the computer.

- **YEAR** (mandatory) - A two digit integer for the last two digits of the fiscal year the work function is being funded or submitted as part of the

budget. The database will contain three fiscal years: the budget year (BY), the prior budget year (BY - 1) and the current year (BY - 2).

## **Micro-ABS Reports**

Table B1 is a list of the available reports on the Micro-ABS system. These reports are briefly described in this appendix, and when applicable, a comparison to a comparable WCC report will be made. See Table B2 for a list and description of WCC mainframe reports.

**TABLE B1  
LIST OF MICRO-ABS REPORTS**

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## **MICRO-ABS REPORTS**

- Abbreviated Ranking List
- Cumulative Work Function Report
- Detailed Ranking List
- District Organizational Summary Report
- Navigation Detail Report
- Navigation Screen Report
- Navigation Waterway and Port Code Report
- Project Historical Cost Report
- Project Screen Report
- Project Summary Report
- Tabulation I Report
- Tabulation II Report
- Work Allowance Project Summary Report
- Work Function Screen Report

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• **Abbreviated Ranking List** - This report prints two line per work function selected on micro-ABS, supplying organization code, District rank, cost and cumulative cost, CWIS number, project rank, work function id,

category and feature cost codes, funding level, project name and work function description.

- **Cumulative Work Function Report** - This is a comprehensive report, and can be very large. Since each work function spans seven lines, only about five work functions will fit on each page. Care should be used to confine it to a manageable length if it is to be printed on the desk top printer.

Information in the report includes project category, class, name, state and CWIS number, the District rank, the work function cost, cost breakout, feature cost and category codes, output measure and inspection code, description, arguments and cumulative costs.

This report can be run for a single project or for all the projects, and may select only operations, only maintenance or both operations and maintenance.

- **Detailed Ranking List** - This is a "nine line per work function" report, with organization code and project name, District rank, cost and cumulative cost, CWIS and function id, project rank, funding level, category, description and arguments. You may report on all projects or a single project, and the report may be sorted by District rank only or by District rank within organization code.

- **District Organizational Summary Report** - This report is only on micro-ABS; it is not available on the WCC mainframe. It was developed in response to requests for a report which allowed display of the direct labor breakouts in the modify procedures. In organization code and CWIS order, all costs are displayed for BY -2, BY -1, and the first three levels of the budget year. The report can be limited to a single project, and only operations or maintenance activities may be chosen.

- **Navigation Detail Report** - This is the most comprehensive of the navigation reports. It delivers one or two pages per navigation reach. All dimensions, waterborne commerce statistics and other usage information, interested parties, dredging and cost history available are presented in a single record. This report may be run for a single project or for all.

- **Navigation Screen Report** - This is the form designed to aid input in the "modify" system. On one page per reach, it presents all the information (waterway code, port codes, etc.) required by the micro-ABS system for each navigation reach. It may be run for all projects or for only one.

- **Navigation Waterway and Port Code Report** - This is a very short 1 page or less report (for most Districts) which prints waterway and port codes for all reaches in reach number within CWIS order. It can be selected for all projects or for only one.

- **Project Historical Cost Report** - This report presents, generally in two pages per project, information by feature cost code for the two years prior to the budget year and for the first three levels of the budget year. It differs from the mainframe version in that the micro-ABS report does not display actual expenditure data from the most recent available year, while the mainframe report does include this data. This report may be run for a single project, or for all projects.

- **Project Screen Report** - This report presents most project level data (CWIS, state, project class, surveys, bc-ratio and ten year cost average) in a "three projects per page" format. Once the project screen report is chosen from the menu, the numerical range of CWIS numbers is shown, and you may select any range for the report. You may not, however, select individual projects (except by specifying a narrow range) or more than one range per report.

- **Project Summary Report** - This report prints out one or two pages per project. Data is in feature cost code order, and costs are collected in four columns; contract costs, other costs, personnel and total costs. It may be printed for all projects, a single project or any consecutive range of projects.

- **Tabulation I Report** - This is a "one page per project" report which gives you a preview of the items and amounts represented in your work allowance. It is the same as the report of the same name on the WCC mainframe. The micro-ABS version serves a very specific function. Before BY -1 is uploaded to the WCC mainframe, this report should be run to ensure that the year's data is correct.

- **Tabulation II Report** - This report is very similar to the Tab II report run off the WCC mainframe. It displays the District's work allowance "100K list" and should be run by the District prior to a final upload of BY -1 data.

- **Work Allowance Project Summary Report** - This is a brief "several projects per page" report, useful along with the Tab I report, for checking the projected work allowance data for BY -1 before upload. It is presented in Project Category Class / Subclass Code order, with one line (matching the bottom line on Tab I) per project and totals. No option exists to limit its size, but this should not be a problem, since the entire report would seldom exceed five or six pages.

It can be requested for a single project or for all projects. It can be sorted by District rank alone or by District rank within organization code. This option, along with the large number of data elements presented in a relatively short report, make it a valuable summary tool for project managers or organizational components.

- **Work Function Screen Report** - This is the report designed to accompany the work function "modify" procedure screens. On one page

per work function, it displays all the work function level information which may be changed in the modify process. It may be sorted in any one of four (District rank, CWIS and project rank, category then District, rank and organization) ways to suit the purpose for which it is intended and can be run for any consecutive range of CWIS numbers.

## **WCC Mainframe Standard Reports**

The standard reports for the Operation and Maintenance contain information retrieved from the databases that were previously created. These reports can be used during the budget cycle to determine the impact of prioritization by the District, Division or HQUSACE. All these reports may be generated for a specific range of headquarter's ranks. Division may also select data from just one District when generating the report. Following is a brief description of each report. Table B2 is a complete list of the following reports.

- **Abbreviated Ranking List** - This report is similar to the Detailed Ranking list. However, it does not show the work function description funding argument.
- **Capability Report** - This report shows all work functions that have qualified for inclusion into Corps wide capability program. The total amount shown on this report must agree with the Division Engineer's testimony before Congress concerning the Division's capability in the area of Operation and Maintenance.
- **COFMAR Detail Report** - This report shows the individual work functions that are included in the Catalog of Maintenance and Repair.
- **Correction Report** - After the Division office has made adjustments to the District budget data, this report will show what adjustments have been made, when they were made, the type of correction and when the correction was applied to the Division database.
- **Detailed Ranking List** - This report shows the work function description and funding argument in OCE rank order. Included in this report are the project name, CWIS number, rank in project Division ranks, the work function category, and work function costs. Also shown is the cumulative cost of work at each OCE rank. You may also generate separate ranking lists for each work function category. This report is useful for updating and checking Division or District rank assignments.
- **District Organizational Summary Report** - This report summarizes contract costs, direct labor costs, engineering and design costs, supervision and administration costs and other costs by project and by organizational element code. This report would be useful only if the District decided to enter organization codes with its budget submission data.

**TABLE B2**  
**LIST OF WCC MAINFRAME REPORTS**

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## **WCC MAINFRAME REPORTS**

- Abbreviated Ranking List
- Capability Report
- COFMAR Detail Report
- Correction Report
- Detailed Ranking List
- District Organizational Summary Report
- Division OCE Correction Report
- Dredging Summary Report
- Estimated Expenditure Report
- Feature Cost Summary Report
- Justification of Estimates Report
- Navigation Reach Information Report
- Project Historical Cost Summary Report
- Project Summary Report
- Work Allowance Contract Priority Report
- Work Allowance Summary Report
- Work Function Category Summary Report
- Work Function Cumulative Report
- Work Function Detail Report

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• **Division OCE Correction Report** - During the review process conducted by the Division office and by HQUSACE, certain work functions may be flagged for correction. This report will display information about these work functions and show what will be corrected.

• **Dredging Summary Report** - This report summarizes cubic yards dredged and the cost of dredging for work functions within a specified range of OCE ranks. It is useful for determining the makeup of a dredging program.

- **Estimated Expenditure Report - (Tabulation I)** This report is run during the preparation of the work allowances. It shows the estimated or approved initial work allowances for each project. Costs are broken down into ongoing contract costs, new contracts under \$100,000, hired labor hopper dredging costs, hired labor costs for non-hopper dredges, all other hired labor costs, and all other costs. Descriptions and Division rank assignments for ongoing contracts are displayed for each project.
- **Feature Cost Summary Report** - This report summarizes contract costs, personnel costs, other costs and total cost for all work functions within a specified range of OCE ranks. It is useful for determining the makeup of various programs, such as recreation or dredging.
- **Justification of Estimates Report** - All totals shown for other report do not correspond to Budget Authority because they do not include credits and income. This report shows total budget authority for each project. It also shows subtotals for each project category and class. Use this report when preparing your Justification of Estimate sheets.
- **Navigation Reach Information Report** - This program will generate one to three reports which will show all information pertaining to each navigation reach in the database file.
- **Project Historical Cost Summary Report** - This report summarizes actual expenditures from the prior year (BY -3), estimated obligations from the current year (BY -2), estimated obligations from the prior budget year (BY -1) and estimated obligations from the first three funding levels of the budget year. It is often used for comparing budget cost estimates with historical costs.
- **Project Summary Report** - This report summarizes feature cost data for each project by feature cost code. Also displayed is data related to the project such as project class, project category, waterway and port codes. Knowing the OCE ranks in which you will be funded, will allow this report to determine the impact that the funding level will have on each of your projects.
- **Work Allowance Contract Priority Report** - This report is run during the preparation of the work allowances. It lists data on work functions for contracts greater than \$100,000 in Division rank priority. It is similar to the Abbreviated Ranking List.
- **Work Allowance Summary Report** - This report is run by District and Division offices to view their approved initial work allowances for each project. It is similar to the Justification of Estimate sheet report.
- **Work Function Category Summary Report** - This report summarizes contract cost, personnel cost, other costs and total cost for all work functions within a specified range of OCE ranks. It is useful if you want to

determine the impact that funding at a certain level will have on major programs in your District or Division.

- **Work Function Cumulative Report** - This report shows the descriptions for each work function in OCE rank order within each project. Also shown are the Division and District ranks, the work function category, the cost of each work function and the cumulative cost of all work functions within a project. With this report, you can determine in which funding levels certain work functions were placed. You can also determine which work functions were included in budget after the Division or OCE has assigned its final rankings.

- **Work Function Detail Report** - Each page of this report shows all the information for a given work function that is stored in the database. Work functions are shown in OCE rank order. At the bottom of the report, the feature cost breakout for the work function is shown. This report can serve as the hard copy by District and Division offices when they were assigning ranks to each work function. You also can print this report in four sort sequences.

# **Appendix C**

## **Minutes of Project Team**

### **Meetings and Technical**

### **Memos**

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Memo to ABS File  
 From: R. Males  
 Date: 10/2/91  
 Re: examples, description of tables in ABS.RSF

Tables in the Database DSSABS

Table	Columns	Rows	Usage
catfeat	2	119	correspondence between category and fccd
cat_tit	5	91	corresp. betw. project, category classes, titles
class	3	33	fundlev, year_type cross-reference
correct	41	77	change records giving old/new info
district	7	80	district code, eroc, program type, div dst names
dredge	2	9	text description for dredge type code
feat_tit	2	102	text title for each FCCD (feature cost code)
fundlev	2	17	fundlev code, year type cross-reference
history	5	3769	expenditure by FCCD, CWIS District in a year
interest	2	5	code lookup for interest code description
omb92	31	7377	primary table for work function ranking info
project	14	196	project info table (by district, cwis number)
purpose	3	16	lookup table for text, sort order for seqno
rankhist	21	113	?? [shows prior to particular change - per MRW]
reason	2	82	text for each integer reascode
year	2	4	correspondence between year and year_type

Note that category titles are in close correspondence with fccd titles, but are not exactly the same

OMB92 - total cost does not appear to be sum of other costs.

Funding level codes (from documentation, p.84)

code	year	meaning
1	BY	Minimum Funding Level
2	BY	Adequate Funding Level
3	BY	Normal and Customary Funding Level
4	BY	First Enhancement Funding Level
5	BY	Second Enhancement Funding Level
6	BY	Used to denote major rehab. work
7	BY	"Deleted" Work Function
F	prior	Funded Hired Labor
O	prior	Ongoing Contract
R	prior	Contract over \$100k included in Division recommended program
T	prior	Contract over \$100k above Division recommended program
U	prior	"Deleted" Work Function

project class  
 appears to be a code that may combine two c/c/s codes(e.g. MN,MP both 300)  
 (but is usually one to one)

TABLE: CATFEAT

1 category	TEXT	3
2 fccd	TEXT	5

correspondence between category and fccd

category	fcdd
C01	90
D01	33.11

D02 33.3  
 E01 02.4  
 E02 07.53  
 E03 07.13  
 E04 07.11  
 E05 07.12  
 E06 07.23

TABLE: CAT\_TIT

1 category TEXT 3  
 2 cat\_tit TEXT 77  
 3 descrip\_req TEXT 1  
 4 argum\_req TEXT 1  
 5 output\_tit TEXT 35

lookup table given info about a category code (title, various switches)

category	cat_tit	descrip	argum_re	output_tit
N01	LOCK OPERATIONS	N	N	-
X01	DAM OPERATIONS	N	N	-
X02	RESERVOIR OPERATIONS	N	N	-
S09	EFFECIENCY REVIEW	Y	Y	-
E12	WATER QUALITY ANALYSIS AND STUDIES	Y	Y	-
E13	INSPECTION OF COMPLETED WORKS	N	N	Number of Projects Inspected
S07	ENERGY CONSERVATION REPORTS	Y	Y	-
S10	PROJECT MOBILIZATION PLANS	Y	Y	-
S03	OSHA INSPECTIONS	Y	Y	-
P08	TIMBER HARVEST	Y	Y	-
X06	DAM MAINTENANCE	Y	Y	-
S05	OSHA DEFICIENCIES AND MEDICAL EXAMS	Y	Y	Number of Employees Examined

TABLE: CLASS

1 projcls TEXT 2  
 2 catclass INTEGER  
 3 class TEXT 50

correspondence between project class, category class, and class title  
 (category class codes are similar to those in Forcon for appropriation code C  
 (O&M General)

projcls	catclass	class
EC	520	CONTINUITY OF GOVERNMENT PREPAREDNESS
EF	540	NATIONAL EMERGENCY FACILITIES
EP	510	MOBILIZATION PREPAREDNESS
EW	530	EMERGENCY WATER PREPAREDNESS
FC	220	FLOOD CONTROL - CHANNELS
FF	212	MAJOR REHABILITATION OF FLOOD CONTROL RESERVOIRS
FG	223	MAJOR REHAB. OF CHANNEL IMPROVEMENT PROJ.
FH	213	COST SHARED RECR. DEVEL. - FLOOD CONTROL RESERV
FI	221	INSPECTION OF NON-FEDERAL LEVEES

TABLE: CORRECT

1 corrrdate INTEGER  
 2 olddistrict TEXT 3  
 3 oldcwis INTEGER

4	oldyear	INTEGER
5	fundcid	INTEGER
6	newdistrict	TEXT 3
7	newcwis	INTEGER
8	newyear	INTEGER
9	newfundcid	INTEGER
10	reascode	INTEGER
11	corrtype	TEXT 3
12	applydate	INTEGER
13	fundlev	TEXT 1
14	oldlevel	TEXT 1
15	category	TEXT 3
16	oldcat	TEXT 3
17	fcod	TEXT 5
18	oldfcod	TEXT 5
19	divrank	INTEGER
20	dsrank	INTEGER
21	totcost	CURRENCY
22	oldcost	CURRENCY
23	contracts	CURRENCY
24	dirlabor	CURRENCY
25	other	CURRENCY
26	contred	CURRENCY
27	corpsed	CURRENCY
28	contraa	CURRENCY
29	corpsaa	CURRENCY
30	totdreg	CURRENCY
31	typdreg	TEXT 2
32	inspectcd	TEXT 7
33	descrip	TEXT 56
34	olddescrip	TEXT 56
35	argum1	TEXT 64
36	oldargum1	TEXT 64
37	argum2	TEXT 64
38	oldargm2	TEXT 64
39	output measure	INTEGER
40	biddate	INTEGER
41	advdate	INTEGER

change records giving old/new info

corrdate	olddistr	oldcwis	oldyear	fundcid	newdistr	newcwis
900725	CB2	63	92	305 CB2		63
900725	CB2	68	92	65 CB2		68
900725	CB2	2440	92	305 CB2		2440
900725	CB2	7760	92	300 CB2		7760
900725	CB3	2700	92	385 CB3		2700
900725	CB3	11370	92	540 CB3		11370
900725	EB4	7090	92	50 EB4		7090
900726	CB2	6200	92	25 CB2		6200
900726	CB3	2560	92	445 CB3		2560
newyear	newfundcid	reascode	corrtype	applydate	fundlev	oldlevel
92	305	10 DEL		900810 -	1	
92	65	10 DEL		900810 -	1	
92	305	10 DEL		900810 -	1	
92	300	10 DEL		900810 -	1	
92	385	8 DEL		900810 -	3	
92	540	8 DEL		900810 -	3	
92	50	55 CHG		900810 -	2	
92	25	55 CHG		900810 -	1	
92	445	5 CHG		900810 -	2	
category	oldcat	fcod	oldfcod	divrank	dsrank	totcost
-	R10	-	24.1	11077	10550	\$0.00
-	R10	-	24.1	11062	10510	\$0.00
-	R10	-	24.1	11059	10505	\$0.00
-	R10	-	24.1	11095	10600	\$0.00
-	R07	-	07.54	30052	33990	\$0.00
-	R10	-	24.1	30573	35020	\$0.00
-	R01	-	05.1	20546	21245	\$0.00
-	N03	-	22.1	10897	10425	\$100.00
R10	R01	24.1	05.1	28130	23050	\$0.00
oldcost	contracts	dirlabor	other	contred		
\$50.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$150.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$30.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$60.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$400.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$84.00	\$15.00	\$32.00	\$20.00	\$0.00	\$0.00	\$0.00
\$100.00	\$0.00	\$80.00	\$10.00	\$0.00	\$0.00	\$0.00
\$107.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
corpsed	contraa	corpsaa	totdreg	typdreg		
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$0.00	\$0.00 -			
\$0.00	\$0.00	\$17.00	\$0.00 -			
\$0.00	\$0.00	\$10.00	\$0.00 -			
\$0.00	\$0.00	\$7.00	\$0.00 -			

```

inspectc descrip olddescrip
-----
- - CONSTRUCTION OF BAPTISTE COLLETTE DELTA SPLAY
- - MARSH CREATION
- - MARSH CREATION, SABINE NATIONAL WILDLIFE REFUGE
- - MARSH CREATION
- - FISH MIGRATION AND SURVIVABILITY STUDY
- - ENV ISSUES - MGMT OF NAT RES CALHOUN PT RESTORATION
- - MGT OF NATURAL RESOURCES
- - FENDER SYSTEM & OTHER MISC REPAIRS
- - RESTORE MARGINAL & ERODED LANDS - 15 SEPARATE LOCATIONS
argum1
-----
-
-
-
-
-
FUNDS REQUIRED TO PERFORM FISH & WILDLIFE HABITAT
-
-
oldargum1
-----
DIVERT FRESH WATER TO RESTORE MARSH & DECREASE WETLAND LOSS.
ADDITIONAL COSTS INCURRED TO USE MAINTENANCE DREDGING MATERIAL
ADDITIONAL COSTS INCURRED TO USE MAINTENANCE DREDGING MATERIAL
PUMP DREDGED MATERIAL FROM MI 0-10 TO SHALLOW OPEN WATER AREAS
COOP STUDY TO DETERMINE THE MIGRATION & SURVIVABILITY OF TAGGED
RESTORATION OF WETLAND COMPLEX PHASE 2 TO INCLUDE SILT DEFLEC
MGT OF NATURAL RESOURCES TO OFF-SET LOSSES IN UPPER YAZOO BASIN
PERFORM MAINTENANCE THAT WILL PROVIDE BENEFITS BEYOND THE BUDGET
REFORESTATION AND CONVERSION OF MARGINAL AND ERODED PUBLIC LAND
argum2
-----
-
-
-
-
-
RESTORATION & MGMT, & FOREST MGMT ACTIVITIES
-
-
oldargm2 output_mea
-----
(SEE DREDGING WF ID 5) 0
FOR CREATION OF MARSH (PART OF DREDGING CONTRACT-WF ID 10) 0
FOR CREATION OF 150 ACRES OF MARSH. (SEE DREDGING WF ID 50) 0
TO CREATE MARSH. (SEE DREDGING WF ID 20) 0
BASS 6-8 IN LONG IN THE AREA ABOVE & BELOW THE RAILROAD TRESSEL 0
DIKES, INTERIOR DREDGING ISLAND CREATION 0
PROJ ACCORDING TO MITIGATION PLAN 0
YEAR. 0
TO NATIVE WARM SEASON GRASSES IN ACCORDANCE WITH PL 86-717 0

```

TABLE: DISTRICT

#	Name	Type	Index	Expression
1	district	TEXT	3	
2	dstnam	TEXT	3	
3	eroc	TEXT	2	
4	progtyp	TEXT	3	
5	divnam	TEXT	3	

6 distitle TEXT 22  
7 divtitle TEXT 35

district code, eroc, program type, div dst names (why is this not the standard 3 character code?) (note that district code is eroc prefixed with C, F, E to distinguish program type - C = GEN, E = MRT, F = GRP) [table not normalized].

Example:

district	eroc	divnam	divtitle
dstnam	progtyp	distitle	
CB1 LNM B1 GEN LMD	Memphis District	Lower Mississippi Valley Division	
CB2 LNM B2 GEN LMD	New Orleans District	Lower Mississippi Valley Division	
CB3 LMS B3 GEN LMD	St. Louis District	Lower Mississippi Valley Division	
CB4 LMK B4 GEN LMD	Vicksburg District	Lower Mississippi Valley Division	
CC1 MRK C1 GEN MRD	Kansas City District	Missouri River Division	
CC2 MRO C2 GEN MRD	Omaha District	Missouri River Division	
EB1 LNM B1 MRT LMD	Memphis District	Lower Mississippi Valley Division	
EB2 LNM B2 MRT LMD	New Orleans District	Lower Mississippi Valley Division	
EB3 LMS B3 MRT LMD	St. Louis District	Lower Mississippi Valley Division	
EB4 LMK B4 MRT LMD	Vicksburg District	Lower Mississippi Valley Division	

#### TABLE: DREDGE

1 typdreg TEXT 2  
2 dredge TEXT 60

DREDGE 2 9 text description for dredge type code (typdreg)

typdreg dredge

HS	Corps Hopper Dredge, Small Class (less than 2,000 cy)
HM	Corps Hopper Dredge, Medium Class (2,000 - 6,000 cy)
HL	Corps Hopper Dredge, Large Class (greater than 6,000 cy)
SC	Corps Sidelcaster Dredge
AL	All Other Corps Dredges
CA	Non-Hopper Contract Dredge
CS	Contract Hopper Dredge, Small Class (less than 2,000 cy)
CM	Contract Hopper Dredge, Medium Class (2,000 - 6,000 cy)
CL	Contract Hopper Dredge, Large Class (greater than 6,000 cy)

#### TABLE: FEAT\_TIT

1 FCCD TEXT 5  
2 feat\_tit TEXT 56

text title for each FCCD (feature cost code)

FCCD feat\_tit

01.1	LOCK OPERATIONS
01.2	DAM OPERATIONS
01.3	RESERVOIR OPERATIONS
02.1	OPERATION OF SERVICE FACILITIES - ROADS AND BRIDGES
02.2	OPER. OF SERVICE FACILITIES - BLDGS, GROUNDS & UTILITIES
02.3	OPERATION OF SERVICE FACILITIES - PERM. OPER. EQUIP.
03.1	OPERATION OF LEVEES AND FLOODWALLS
03.2	OPERATION OF PUMPING PLANTS
04	OPERATION OF POWER PLANT
05.1	MGMT OF NATURAL RESOURCES EXCLUDING FISH HATCHERIES

05.2 OPERATION OF FISH HATCHERIES  
 05.3 FISH HAULING ACTIVITIES  
 05.4 MGMT OF ARCHAEOLOGICAL & CULTURAL RESOURCES

TABLE: FUNDLEV

#	Name	Type	Index	Expression
1	fundlev	TEXT	1	
2	year_type	TEXT	4	

alpha code for fundlev , year type cross-reference 1-7,9 = BY F,O,R,T,U =  
 BY-1, BY-2

fundlev	year_typ
1	BY
2	BY
3	BY
4	BY
6	BY
7	BY
9	BY
F	BY-1
O	BY-1
R	BY-1
T	BY-1
U	BY-1
F	BY-2
O	BY-2
R	BY-2
T	BY-2
U	BY-2

TABLE: HISTORY

#	Name	Type	Index
1	district	TEXT	3
2	cwis	INTEGER	
3	year	TEXT	2
4	FCCD	TEXT	5
5	expend	DOUBLE	

expenditure by FCCD for a given CWIS and District in a year (currently all 89)

district	cwis	year	FCCD	expend
CB1	7440	89	TC	301.8
CB1	7440	89	07.11	0.5
CB1	7440	89	07.24	11.3
CB1	7440	89	09.21	20.8
CB1	7440	89	19.2	6.9
CB1	7440	89	33.12	243.8
CB1	7440	89	35.1	18.5
CB1	8180	89	TC	116.
CB1	8180	89	07.22	65.6
CB1	8180	89	10.11	49.8
CB1	8180	89	10.21	0.6
CB1	13430	89	TC	301.5
CB1	13430	89	07.11	0.1
CB1	13430	89	07.24	2.
CB1	13430	89	19.2	6.9
CB1	13430	89	33.12	274.2
CB1	13430	89	35.1	18.3

TABLE: INTEREST

1 interest\_tit TEXT 1  
2 interest\_fit TEXT 25

code lookup for interest code description

interest interest\_fit

-----  
C Coast Guard Installation  
M Military Installation  
F Commercial Fish Area  
O Only Access to Area  
P Political

TABLE: OMB92

primary table for work function ranking information, containing oce, division, and district ranks for a given work function for a cwis, district, year, plus additional info [possibly separate out into separate tables, one for live ranking, one for info that will not change]. (what is primary key for omb92 table??)

1 district TEXT 3  
2 cwis INTEGER  
3 year TEXT 2  
4 funcid INTEGER  
5 rank INTEGER  
6 cofmarid INTEGER  
7 orgcode TEXT 4  
8 dstrank INTEGER  
9 divrank INTEGER  
10 ocerank INTEGER  
11 fundlev TEXT 1  
12 category TEXT 3  
13 fccd TEXT 5  
14 totcost CURRENCY  
15 contracts CURRENCY  
16 dirlabor CURRENCY  
17 contred CURRENCY  
18 corpseed CURRENCY  
19 contraa CURRENCY  
20 corpesa CURRENCY  
21 totdreg CURRENCY  
22 typrdreg TEXT 2  
23 inspected TEXT 7  
24 descrip TEXT 56  
25 argum1 TEXT 64  
26 argum2 TEXT 64  
27 contcontr CURRENCY  
28 constraint TEXT 1  
29 output\_measure INTEGER  
30 biddate INTEGER  
31 advdate INTEGER

	district	year	rank	orgcode	ocerank	category				
	cwis	funcid	cofmarid	dstran	divrank	fundlev	fccd			totcost
CB1	7440	90	5	1	900005	NAV	10040	10189	3010189	F E04 07.11 \$20.00
CB1	7440	90	10	3	900010	NAV	20170	20021	3020021	O D01 33.11 \$34.00
CB1	7440	90	15	4	900015	NAV	30290	30012	3030012	R D01 33.11 \$365.00
CB1	7440	90	20	2	900020	NAV	10120	10852	3010852	F E05 07.12 \$25.00
CB1	7440	91	5	1	910005	NAV	10040	10048	3010048	F E04 07.11 \$14.00

CB1	7440	91	10	3	910010	NAV	10170	10081	3010081	F	D01	33.11	\$66.00
CB1	7440	91	15	4	910015	NAV	10290	10567	3010567	F	D01	33.11	\$365.00
CB1	7440	91	20	2	910020	NAV	10120	10069	3010069	F	E05	07.12	\$15.00
CB1	7440	92	5	1	920005	NAV	10125	10159	1008090	1	E04	07.11	\$19.00
CB1	7440	92	10	3	920010	NAV	20220	20045	2001535	2	D01	33.11	\$70.00
CB1	7440	92	15	4	920015	NAV	20244	20156	2003020	2	D01	33.11	\$365.00
CB1	7440	92	20	2	920020	NAV	20212	20033	2001515	2	E05	07.12	\$15.00
CB1	8180	90	5	1	900005	COOP	10020	10144	3010144	F	E13	10.11	\$39.00
CB1	8180	90	10	2	900010	COOP	10270	11464	3011464	F	E13	10.11	\$86.00
CB1	8180	91	5	1	910005	COOP	10020	10042	3010042	F	E13	10.11	\$33.00
CB1	8180	91	10	2	910010	COOP	10270	10363	3010363	F	E13	10.11	\$105.00
CB1	8180	92	5	1	920005	COOP	10115	10045	1002740	1	E13	10.11	\$36.00
CB1	8180	92	10	2	920010	COOP	20238	20096	2002930	2	E13	10.11	\$102.00

contra

contracts	dirlabor	contred	corpsed	corpsa	totdreg	typdreg	inspectc
-----------	----------	---------	---------	--------	---------	---------	----------

\$0.00	\$11.00	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00	-
\$0.00	\$24.00	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00	CA 0000
\$365.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$370.00	CA 0000
\$25.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-
\$0.00	\$8.00	\$0.00	\$0.00	\$0.00	\$2.00	\$0.00	-
\$25.00	\$25.00	\$0.00	\$0.00	\$0.00	\$5.00	\$0.00	CA 0000
\$365.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$370.00	CA 0000
\$15.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-
\$0.00	\$14.00	\$0.00	\$0.00	\$0.00	\$2.00	\$0.00	-
\$25.00	\$29.00	\$0.00	\$0.00	\$0.00	\$5.00	\$0.00	CA 0000
\$365.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$370.00	CA 0000
\$15.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-
\$0.00	\$24.00	\$0.00	\$0.00	\$0.00	\$6.00	\$0.00	-
\$0.00	\$65.00	\$0.00	\$0.00	\$0.00	\$12.00	\$0.00	-
\$0.00	\$20.00	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00	-
\$0.00	\$65.00	\$0.00	\$0.00	\$0.00	\$15.00	\$0.00	-
\$0.00	\$23.00	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00	- 0000
\$0.00	\$63.00	\$0.00	\$0.00	\$0.00	\$15.00	\$0.00	- 0000

descrip

PROJECT CONDITION SEDIMENT SURVEY  
 ANNUAL MAINT DREDGING  
 ANNUAL MAINT DREDGING  
 OTHER CONDITION & OPERATION STUDIES  
 PROJECT CONDITION SEDIMENT SURVEY  
 ANNUAL MAINT DREDGING  
 ANNUAL MAINT DREDGING  
 OTHER CONDITION & OPERATION STUDIES  
 PROJECT CONDITION SEDIMENT SURVEY  
 ANNUAL MAINT DREDGING  
 ANNUAL MAINT DREDGING  
 OTHER CONDITION & OPERATION STUDIES  
 O & M COMPLIANCE INSPECTIONS  
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 O & M COMPLIANCE INSPECTIONS  
 O & M COMPLIANCE INSPECTIONS

argum1

CHANNEL PATROL REPORT TO PROJECT USERS  
 CC DISTRIBUTIVE DEMOBILIZATION COSTS  
 TO ACCOMMODATE EXISTING TRAFFIC  
 TO PROVIDE WATER ANALYSIS - ELUTRIATE TEST - FISH SAMPLING TEST  
 CHANNEL PATROL REPORT TO PROJECT USERS  
 CC DISTRIBUTIVE DEMOBILIZATION COSTS

INSPECTIONS OF 6 PROJECTS WHICH HAVE EXPERIENCED RECENT  
-  
INSPECTIONS OF 6 PROJECTS WHICH HAVE EXPERIENCED RECENT

**TO COMPLY WITH STATE ENVIRONMENTAL REGULATIONS PER SEC 404.**

**IN-DEPTH INSPECTIONS OF 29 PROJECTS.**

contcontr	constrai	output_mea	biddate	advdate
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$25.00	-	0	32990	22690
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$25.00	-	0	41191	30891
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$25.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	0	0	0
\$0.00	-	6	0	0
\$0.00	-	29	0	0

1	district	TEXT	3
2	cwis	INTEGER	
3	projcls	TEXT	2
4	projnam	TEXT	48
5	state	TEXT	2
6	fecode	TEXT	1
7	tenyrave	DOUBLE	

```

8 surveys      INTEGER
9 lowuse       TEXT      1
10 tonnage     DOUBLE
11 interest    TEXT      1
12 politician  TEXT      40
13 authproj    TEXT      63
14 authcwis    INTEGER

```

project info table (by district, cwis number)

dist	cwis	projcls	projnam	state	tenyrove fee	tenyrove survey	tenyrove tennage	interest politician	auth proj
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
CS0	88929	MP	COLUMBIA R. SYSTEM OPERATION REVIEW	WA	-	0. 0 -	0. - -	COLUMBIA R. SYSTEM OPERATION REVIEW	
CS1	360	NC	ANCHORAGE HARBOR	AK	A	0.6 12 -	2294.5 - -	ANCHORAGE HARBOR, AK	
CS1	431	NC	THOMAS BASIN (KETCHIKAN)	AK	A	0. 0 Y	2004.9 - -	THOMAS BASIN (KETCHIKAN), AK	
CS1	4800	NC	BILLINGHAM SMALL BOAT HARBOR	AK	F	12.1 2 Y	28.8 - -	BILLINGHAM SMALL BOAT HARBOR, AK	
CS1	8180	FI	INSPECTION OF COMPLETED WORKS	AK	-	0. 0 -	0. - -	INSPECTION OF COMPLETED WORKS	
CS1	12640	NC	WILCHIK HARBOR	AK	F	9999.6 2 Y	0. P YOUNG WILCHIK HARBOR, AK		
CS1	14400	PS	PROJECT CONDITION SURVEYS	AK	-	0. 11 -	0. - -	PROJECT CONDITION SURVEYS	
CS1	17500	NC	STIKINE RIVER SHAGGING	AK	F	0.6 0 -	0. - -	STIKINE RIVER SHAGGING, AK	
CS1	21500	NC	WRANGELL HARBOR	AK	F	0. 0 Y	0. - -	WRANGELL HARBOR, AK	
EB2	23274	FC	MISSISSIPPI DELTA REGION - CAERNARVON	LA	-	0. 0 -	0. - -	MISSISSIPPI DELTA REGION - CAERNARVON	
EB3	19420	FR	MAPPAPELLO LAKE MO	MO	N	0. 0 -	0. - -	MAPPAPELLO LAKE, MO	
EB4	600	FR	ARKABUTLA LAKE	MS	N	0. 0 -	0. - -	ARKABUTLA LAKE, MS	
EB4	1490	FC	YAZOO BASIN-BIG SUNFLOWER	MS	N	0. 0 -	0. - -	YAZOO BASIN-BIG SUNFLOWER, MS	
EB4	5590	FR	ENID LAKE	MS	N	0. 0 -	0. - -	ENID LAKE, MS	
EB4	7050	FC	YAZOO BASIN-GREENWOOD	MS	N	0. 0 -	0. - -	YAZOO BASIN-GREENWOOD, MS	
EB4	7090	FR	GRENADA LAKE	MS	N	0. 0 -	0. - -	YAZOO BASIN-GRENADA LAKE, MS	
EB4	10220	FC	LOWER RED RIVER - SOUTH BANK LEVEES	LA	N	0. 0 -	0. - -	LOWER RED RIVER - SOUTH BANK LEVEES, LA	

#### TABLE: PURPOSE

```

1 seqno      INTEGER
2 purpose    TEXT      55
3 sort_order TEXT      1

```

lookup table for text, sort order for seqno (seems to be duplicated)

seqno	purpose	sort_ord
1	TESTING FOR FY 1992 BUDGET	A
2	CUT SAD ENVIRON DREDG STUDIES	D
3	\$40 MILLION DECREMENT LIST	D
4	\$46 MILLION MAINTENANCE CUT	D
5	\$11 MILLION MAINTENANCE CUT	D
6	AT LEAST \$ 11 MILLION	D
7	\$77 MILLION MAINTENANCE CUT	D
8	\$6 MILLION MAINT CUT	D
1	TESTING FOR FY 1992 BUDGET	A
2	CUT SAD ENVIRON DREDG STUDIES	A
3	\$40 MILLION DECREMENT LIST	D

**D  
D  
D  
D  
D**

1	seqno	INTEGER	
2	corrdate	INTEGER	
3	oldrank	INTEGER	
4	newrank	INTEGER	
5	district	TEXT	3
6	cwis	INTEGER	
7	year	TEXT	2
8	funcid	INTEGER	
9	oldcost	CURRENCY	
10	newcost	CURRENCY	
11	olddreg	CURRENCY	
12	newdreg	CURRENCY	
13	contracts	CURRENCY	
14	dirlabor	CURRENCY	
15	other	CURRENCY	
16	contrad	CURRENCY	
17	corpoad	CURRENCY	
18	contraa	CURRENCY	
19	corpeaa	CURRENCY	
20	descrip	TEXT	56
21	category	TEXT	3

		dist		cwis	year	funcid	oldcost	newcost	olddreg	
seqno	corrdate	oldrank	newrank							
3	901017	3000180	3000180	CG2	3630	92	90	\$848.00	\$848.00	\$300.00
3	901017	3000185	3000185	CG2	3900	92	5	\$296.00	\$296.00	\$51.00
3	901017	3000190	3000190	CG2	16930	92	15	\$174.00	\$174.00	\$50.00
4	901102	2022220	2022220	CG4	9880	92	165	\$27.00	\$27.00	\$0.00
4	901102	2022295	2022295	CG1	12640	92	5	\$232.00	\$232.00	\$70.00
4	901102	2022305	2022305	CG1	87246	92	5	\$395.00	\$395.00	\$20.00
8	901105	3000180	3000180	CG2	3630	92	90	\$848.00	\$848.00	\$300.00
8	901105	3000185	3000185	CG2	3900	92	5	\$296.00	\$296.00	\$51.00
8	901105	3000190	3000190	CG2	16930	92	15	\$174.00	\$174.00	\$50.00

newdreg	contracted	dir	labor	other	contrd	corp	contra	corpsa
\$300.00	\$750.00	\$0.00	\$0.00	\$0.00	\$36.00	\$0.00	\$62.00	
\$51.00	\$0.00	\$104.00	\$171.00	\$0.00	\$0.00	\$0.00	\$21.00	
\$50.00	\$150.00	\$0.00	\$0.00	\$0.00	\$12.00	\$0.00	\$12.00	
\$0.00	\$0.00	\$9.00	\$15.00	\$0.00	\$0.00	\$0.00	\$3.00	
\$70.00	\$105.00	\$100.00	\$8.00	\$0.00	\$12.00	\$0.00	\$7.00	
\$20.00	\$263.00	\$49.00	\$37.00	\$0.00	\$24.00	\$0.00	\$20.00	
\$300.00	\$750.00	\$0.00	\$0.00	\$0.00	\$36.00	\$0.00	\$62.00	
\$51.00	\$0.00	\$104.00	\$171.00	\$0.00	\$0.00	\$0.00	\$21.00	
\$50.00	\$150.00	\$0.00	\$0.00	\$0.00	\$12.00	\$0.00	\$12.00	
descrip					category			

CONTRACT MAINT DREDGING TONGUE POINT	D01
MAINTENANCE DREDGING ENTRANCE CHANNEL	D01
CONTRACT MAINTENANCE DREDGING INNER CHANNEL	D01
LOCK MAINTENANCE	M03
MAINT DREDGING OF HARBOR AND ENTRANCE CHANNEL	D01
MAINTENANCE DREDGING	D01

CONTRACT MAINT DREDGING TONGUE POINT	DO1
MAINTENANCE DREDGING ENTRANCE CHANNEL	DO1
CONTRACT MAINTENANCE DREDGING INNER CHANNEL	DO1

TABLE: REASON

1 reascode	INTEGER
2 reason	TEXT 64

code lookup table giving text for each integer reascode

reascode	reason
0 -	
1	WORK APPROVED--FUND THRU ALIGNMENT OF COSTS IN OTHER ITEMS
2	COST TOO HIGH FOR THIS PARTICULAR WORK FUNCTION
3	COST GROWTH NOT IN LINE W/BUSACE BUDGETARY GUIDANCE
4	FUNDING LEVEL NOT IN CONSONANCE WITH BUDGET MATRIX
5	WORK FUNCTION IMPROPERLY CATEGORIZED
6	DESCRIPTION OF WORK NOT CLEAR
7	ARGUMENT CLARIFIED
8	WORK NOT JUSTIFIED BY ARGUMENT PROVIDE ADDITIONAL JUSTIFICATION
9	WORK NOT AUTHORIZED IN THAT PROJECT
10	WORK NOT AUTHORIZED OR APPROVED UNDER O&M
90 -	
91	NEW REASON CODE
99	DIVISION DEFAULT

TABLE: YEAR

1 year	TEXT	2
2 year_type	TEXT	4

correspondence between year and year\_type

year	year_typ
92	BY
91	BY-1
90	BY-2
89	PY

Mike and Dick:

I tested all the options except the generate SQL and browse work function options. I could not verify the results of the scenarios against what I have on the mainframe database because you have an earlier version of OMB93 and because of a problem I encountered when generating the scenarios. I divided my comments between major and minor problems that I encountered.

A. Major Problems

1. I generated two primary scenarios of my own, one of which is displayed in Encl 1. What I was trying to do was to isolate large funded dredging work functions in three divisions. Unfortunately, the results returned were for more than the three divisions and for more than one feature cost code (dredging is just feature cost code 33.11). Did I do something wrong? I created the scenario, edited it, selected it, built it and evaluated it. The results are shown after the scenario forms display enclosed. I also tried another scenario with one division and one CWIS number and when I built it, I got more than one project and more than one division.

2. The first time I created a primary scenario, I tried using a wild card. I entered '33' in the feature cost window. When I later tried to build this scenario, the program aborted during the 'building temporary SQL statement' message. When I later changed the feature cost to '33.11', the program ran correctly.

3. When I built a composite scenario from two fairly small scenarios - 527 and 383 records - it took nearly two hours to build the composite scenario.

II. Minor problems.

1. It took me some time to get used to moving through the menus and forms but once I learned the right key sequences to use it became easier. I would suggest showing key options somewhere on each form.

2. OCE, CWIS and FCCD flags entries on the first form do not seem necessary. If you are always going to make the user go through the second form where you enter individual OCE ranks, CWIS numbers and FCCD codes, then you can check for the existence of entries in those areas instead of asking the user to flag them.

3. Some entries are given validity checks and some are not. Would be nice if all had validity checks. Also, for entries such as 'APP', it would help if only capital entries were allowed.

4. Some cosmetic improvements on the first form:

- a. Change 'APP' to 'Approp'
- b. Change 'Rank' to 'OCE Ranks'
- c. Change 'LUNP' to 'LOW USE NAVIG'

5. Some cosmetic improvements on the second form:

- a. change 'OCE' to 'OCE Ranks'
- b. change 'FCCD' to 'Feature Cost Codes'

6. The scenario evaluation report should have the scenario description, explanation and a summary of the criteria involved in the scenario. Also, it should have totals for divisions and project classes.

7. All reports should page eject after last page. I have laser printer and it is not always easy to know if the last page has been printed.

Dave Harmon  
CECW-OM-b

Edit Go to Exit

Name	App	Rank
scenel	C 0	to 2800000
Min Cost	\$1,000.00	
Cum Cost	\$20,000.00	A/D D
Measure	-0- to -0-	
LUMP	-	
FOCD flag X OCE flag - CWIS flag -		

DIV

MAD  
SAD  
MCD

CLASS

Description

HIGH COST FUNDED DREDGING IN MAD, SAD AND MCD

Notes

SHOW HURT FOR \$20 MILLION CUT

ENCL 1

Form: primescn2 Table: scenario Field: scenname Page: 1  
Edit Go to Exit

	CWIS	OCE	FCCD
scenel			I 33.11

ENCL 1

Temporary Scenario Table      Date: 02/10/92    Time: 12:42

Scenario: scenel

Number of Work Functions: 572    Total Cost: \$652,935.00

Temporary Scenario Costs By Division

Scenario: scenel      Date: 02/10/92    Time: 12:42

Division	Total Cost
LMD	\$117,957.00
MRD	\$805.00
MAD	\$96,811.00
MCD	\$163,787.00
MED	\$2,005.00
NPD	\$41,052.00
ORD	\$6,882.00
POD	\$4,622.00
SAD	\$149,167.00
SPD	\$30,954.00
SWD	\$38,893.00

Temporary Scenario Costs By Division

Scenario: scenel      Date: 02/10/92    Time: 12:42

Proj Class	Total Cost
FC	\$20,059.00
MN	\$3,363.00
NA	\$884.00
NC	\$482,677.00
ND	\$5,720.00
NG	\$2,040.00
NL	\$138,192.00

Temporary Scenario Costs By FCCD Prefix

Scenario: scenel      Date: 02/10/92    Time: 12:42

FCCD	Total Cost
1.	\$35,062.00
2.	\$1,178.00
7.	\$1,301.00
21.	\$13,595.00
22.	\$19,804.00
23.	\$1,050.00
25.	\$14,000.00
26.	\$2,735.00
31.	\$2,427.00
33.	\$561,783.00

Total: \$652,935.00

Temporary Scenario Costs By FCCD

Scenario: scenel      Date: 02/10/92    Time: 12:42

FCCD	Total Cost
01.1	\$35,062.00
02.2	\$1,178.00

ENCL 1

07.11	\$1,301.00
21.11	\$13,595.00
22.1	\$19,804.00
23.2	\$1,050.00
25.1	\$14,000.00
26.1	\$2,735.00
31	\$2,427.00
33.11	\$543,240.00
33.21	\$1,582.00
33.22	\$2,243.00
33.3	\$14,718.00
Total:	\$652,935.00

ENCL 1

Decision Support for the O&M Budget Process  
Initial Meeting  
0900 8 October 1991  
Water Resources Support Center  
Casey Building  
Fort Belvoir, VA 22060

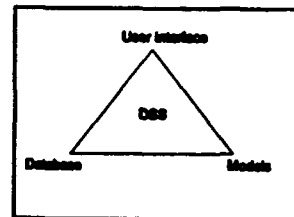
AGENDA

- I. Introductions
- II. Current Status of Automated Budget System (ABS) Process
  - A. Overview - Dave Harmon
  - B. Timeline for ABS Process
  - C. Data Entry and Consolidation - Connie Razymakers
  - D. Port to Oracle
  - E. Planned Changes - Dave Harmon

- III. Concept and Approach for a Budget Decision Support System

- A. Overview - Michael Walsh

- 1. Examine existing process and systems
    - 2. Determine database and analytical requirements
    - 3. Develop prototypes
    - 4. Prepare system concept report
    - 5. Implement interim system



- B. Approach to Requirements and Prototype Design - Dick Males

- C. Interim System - Michael Walsh

- IV. Demonstration of Corps O&M Budget Decision Support System (COMB DSS) Pre-Alpha Version 0.1

- V. Design and Development Issues

- A. Who is the User?

- 1. Dave Harmon
    - 2. John Perez
    - 3. Jim Crews
    - 4. John Elmore

- B. Database Issues

- 1. Should structural changes be considered?
    - 2. What additional criteria should be added?
    - 3. What sub-set of the data is needed for analysis?

**C. Modeling Issues**

**1. What priority should be given to the following list?**

- a. Rank Generators
- b. Scenario Analyst
- c. Statistical Analyst
- d. Financial Analyst

- (1) 'Cut-off' Analyses
- (2) Cost Distribution Analyses

- e. Criteria Analyst

**2. What specific capabilities should each model set have?**

**D. DSS Environment**

- 1. Hardware/Software Options
- 2. User Interface Options

**E. Integration with Corps "Corporate Data Base"**

- 1. Oracle
- 2. Client-Server Approach

**F. Communication within the IOMT project team**

**VI. Funding and Schedules**

**VII. Other Items for Discussion**

**VIII. Action Items**

## MEMORANDUM FOR RECORD

SUBJECT: Initial Meeting of O&M Budget Decision Support System Project Team

1. The initial meeting of the project team that is developing an O&M budget decision support system was held at the Institute for Water Resources on 8 October 1991. This work effort is part of an IOMT work unit on the application of decision support systems for O&M management. The success of this effort depends on the cooperative effort of researchers from IWR, CERL, WES and private contractors working with the users of the decision support systems at Headquarters, Divisions and Districts. This meeting brought together the developers of the decision support system with one of the primary users to discuss the proposed work, identify any critical issues that must be addressed, and set timetables and responsibilities for tasks that are to be conducted this fiscal year.

Attending were: Dave Harmon, CECW-OM; Ed Japel, CECER-FS; Connie Raaymakers, CECER-FS; Steve Scott, CECWES-HE-E; Michael R. Walsh, CEWRC-IWR; Richard Males, RMM Technical Services, Inc.; and Craig Strus, Planning and Management Consultants Limited. Males and Strus represented the contracting team working on the project. The agenda for the meeting is attached.

2. Current Status of ABS. Dave Harmon presented an overview of the ABS cycle. The cycle begins in March, with a nationwide meeting, at which budget guidance is provided (based on the budget EC). A budget matrix is provided that describes how work functions are to be allocated to discrete funding levels. At this time each Division offices is given a target dollar figure for their budget. Divisions can show work they would like to do that is above this target. The Division gets a single number for its target (all Districts, all programs in O&M). From March to May, the field works on submittals. Information is entered by Districts into local databases via personal computer using the PC-ABS software developed by CERL. During this period, no new dollar information is likely to be provided to the Districts. On or about May 15, information is uploaded by the Districts to the WCC computer (using the ABS software). Each district's data is kept in separate databases on the WCC computer where it can be examined by the District and its Division. Once uploaded, the District information is also consolidated into the appropriate Division databases. (Each District and Division have their own databases, to provide an audit trail and history). Divisions rank work units by June 15th, with this information going into the Division-level database. At this time, HQ makes sure that field entries conform to the guidance, and make corrections. The Districts and Divisions can look at this, and protest the corrections, during the period June 15th - July 15th. A database table maintains the latest corrections made. By July 15, the consolidated Corps O&M database is ready for analysis.

Scenario analyses are conducted from 15 July until the end of the fiscal year. Typically, three scenarios are presented to OMB, but this requires processing of a number of sub-scenarios. As described by Dave Harmon, the scenario analysis can take a wide variety of forms, with many different factors explored. The scenario analyses are basically ongoing, 'until we run out of time'. The project historical summary report generated through ABS is the primary vehicle for looking at the database and comparing scenarios.

While this process will likely remain the same, there is a major change underway in the underlying software and hardware used to support the process. The system currently resides in the RAMIS DBMS, on an IBM mainframe at WCC. Current Corps policy requires that the system be ported to the Oracle DBMS on the CEAP CDC machine. This port is underway and is being carried out by Cathy Ballard at WES, and is scheduled for testing in December. A test of upload capability is planned for February, at which time a go-no go determination will be made on using the Oracle port, or retaining the existing system for the next budget cycle. No changes will be made to this critical system until it can be demonstrated that the new system is functional.

There is interest in including condition indices for maintenance work to assist in the decision process. The development of condition indices is part of the REMR research program. Condition indices are numerical ratings that indicate the condition of an existing structure or component against a 'new' condition. The addition of condition indices can be accomplished within the existing structure of the ABS database. The existing structure field 'output measure' can be used to store the condition index, and can be linked to the particular structure using the 'cofmarid' field of the ABS. The analysis of the condition indices with respect to funding for maintenance remains problematic.

Communications capability from the field to the ABS was discussed. One of the major advantages of the existing system is that the field rapidly gets information on the budget (2 hours after decisions are made). Currently, this is through direct access to the IBM machine - download possibilities for this information are being explored. The CEAP backbone is not currently installed at all Districts - accordingly, communications with the ABS Oracle port are expected to be maintained through async communications, using a version of Kermit obtained from Lehigh University. This version has a variable packet size, giving effective 9600 bps throughput while connected at 2400 bps.

3. Concept for Budget Decision Support System. I described the overall framework for the Decision Support System (tentatively named the Corps O&M Budget Decision Support System, COMB\_DSS). A DSS is comprised of three parts - a user interface, a database, and model base. Presently, the ABS system has a well developed database, with a less developed model base and user interface. The COMB\_DSS will develop a set of model or analysis tools and an appropriate user interface and integrate these components with the database to provide a working decision support system. In overview, the process will: 1) examine existing processes and systems; 2) determine database and analytical requirements; 3) develop prototypes; and 4) prepare a system concept report. The prototype is directed primarily at HQ needs, with field desires to be addressed where possible. The Rock Island District will serve as the starting point for looking at field requirements.

The project is conceived as starting with development of a PC-based 'prototype' system, that serves as a proof of concept of the DSS. The intent is that the prototype will demonstrate PC-based scenario analyses, using BY 93 data. An iterative process for prototype development will be undertaken, with versions demonstrated, and modified based on user feedback. The 'final' prototype should be available in March. The completed prototype is the starting point for development of an 'interim' system, also PC-based, to be used for the actual scenario analysis for BY 94 data. Responsibility for development of the prototype rests with the IWR and PMCL, under contract to IWR, and the interim system will be handled by CERL. The development of interim system will

include the accomplishment of the downloads of BY 94 data from the mainframe (Oracle or RAMIS). The system concept report will include a discussion of the interim system, and additional possibilities for integrating COMB-DSS, perhaps in client-server mode, with the mainframe database on CEAP. The integration of the COMB\_DSS, Oracle Port, Interim System and the corporate solution will be discussed later in this memo.

4. Approach to Requirements Analysis and Prototype Design. Dick Males provided an outline of the proposed approach for the prototype design, in terms of the three components of the DSS (database, models, and user interface). In addition, the overall environment was discussed. For the database, the intent is to mimic, to a great degree, the structure of the mainframe ABS, using a relational DBMS on a PC. Possibilities for structural revision (additional/modified tables and fields) will be explored. Five functional areas of models were proposed:

- Rank Generator - given a set of criteria for work functions, generate a rank;
- Scenario Analyst - given a ranking range, possible additional criteria, determine if a work function is in or out of a given scenario (and possible generate a numerical value as to how far out or in the particular work function is)
- Statistical Analyst - perform 'discovery' to look for relationships in the database, generate overall statistical measures from the database
- Financial Analyst - a) Cut-Off Analysis - given a certain amount of dollars, what will get funded (based on rankings) within a given scenario - i.e., given a set of work functions in a scenario, how far down the list (in descending rank order) can you go without exceeding a given cumulative total dollar amount; b) Distribution Analysis - how does a given scenario and dollar amount result in distributing dollars to Districts, Division, among categories, classes, FCCD's, etc.;
- Criteria Analysts - models that operate on criteria in the database (in all likelihood additional criteria not currently present) that would generate new measures for a work function (i.e. economic, risk-reliability, etc.).

The technical structure of the COMB-DSS database to support the scenario analysis was described and discussed. It is intended to store, for each scenario, a listing of the work functions that are in that scenario, in a separate table. The financial analyst would then operate upon that table to handle dollar measures. Scenario analysis is to be based on ranks (which will not change), and other facts stored about the work function. This conceptual construct is somewhat different from the existing approach to scenario analysis, but was viewed as offering advantages over the present method.

The user interface methodology was discussed. A combination of menu-driven, pre-stored reports and queries, together with the capability of ad hoc querying, is to be provided. The need for great flexibility in developing scenarios was stressed by Dave Harmon. Graphical output is desirable - the exact format and content of charts and mapped output will be explored in the near future. [Dave Harmon is to provide some sketches of the kinds of graphics that might be desired].

The user environment is intended to be a PC. In order to handle the expected large data

base (25 MB), a fast machine should be available with large amount of mass storage. Dave Harmon will be working with a 486/50 PC, so this should not be a problem. Three initial candidate DBMS were proposed - R:Base, Oracle, and Paradox. R:Base was selected because of its strong application development tools, and because of its ability to use industry-standard SQL. Oracle will be investigated further as a possible platform for COMB DSS to maintain compatibility with ORACLE used on CDC mainframe machines. Concern for the flexibility of application development tools in Oracle was expressed. Paradox was included because of its integrated graphics capability, and speed. Insofar as possible, commercial packages will be used for the DSS. The possibility of using the Windows environment for certain types of software also exists. The R:Base environment will be maintained for the next iteration of the DSS, while examining the other options of Oracle and Paradox.

The project will also involve some degree of technology exploratory research, to look at multi-criteria ranking and display methodologies, and examine packaged data analysis systems, graphical user interfaces, and object-oriented paradigms.

5. Pre-Prototype Demonstration. Existing BY 93 data has been provided by Dave Harmon, through downloads from the mainframe database, and I entered this data into the R:Base DBMS on a PC, for initial exploration. Dick Males and I demonstrated some of the capabilities of the R:Base system using this data, including a menued application, forms data entry, and some financial analyst distribution reports, showing total dollars associated with Divisions, Categories, Class, and FCCD, for a user-specified ranking range.

6. Design and Development Issues. Dave Harmon was identified as the immediate 'client' user of the system. Other potential 'hands-on' users might be Jim Crews and John Perez. The possibility of providing a spreadsheet-like interface to the data was suggested by Dave Harmon, as being familiar to a number of users.

The issue of structural change to the database was discussed. If performance enhancement within the DSS can be significantly improved by structural modifications, they should be carried out. The system concept document should report any proposed structural changes for the mainframe system.

The only provision for adding additional criteria at this time needs to be the condition index, but the possibility of other criteria should be considered in the DSS design.

The minimum sub-set of data in the existing system required to be carried forward for the DSS was discussed and a number of tables can be dropped, or summarized, within the database, leading to a much smaller database for the DSS. In particular, correction data need not be carried forward, and some of the history data can be summarized. The complete required data set (91, 92, and 93 data) will be obtained, entered into the database, and the required data set for the DSS will be extracted. This will provide the working database for the prototype development.

Dave Harmon identified the following order of importance for the modeling capability: 1) Scenario Analyst; 2) Financial Analyst; 3) Rank Generator; 4) Criteria Analyst; 5) Statistical Analyst, with items 1 and 2 being essential for the DSS.

7. Coordination of Separate Work Efforts. I have attached a work flow diagram and a

timetable spreadsheet with Gantt chart for the Oracle Port, COMB\_DSS development, Interim System development, and the Corporate Solution. The work flow diagram shows the relationships among the work efforts. Note that the Oracle port must be completed before the beginning of the next budget cycle in March. If for some reason, the Oracle port is not complete, the existing WCC-RAMIS system will be used for the budget cycle. The COMB\_DSS will simply get its data from WCC-RAMIS rather than from ORACLE-CDC. A working prototype of the COMB\_DSS will be ready for integration into the interim system by March 1992. CERL and IWR will work closely to insure that the transition from prototype to interim system is smooth. Once we have one budget cycle under our belts we can concentrate on the Corporate Solution which will more tightly integrate the COMB\_DSS into the proposed CEAP architecture for the 90's. This might mean using tools available within the CEAP hardware and software environment for the COMB\_DSS. This approach can be explored more fully in the next fiscal year.

8. Communications within IOMT project team. I have attached a communications list for all project team members. CorpsMail addresses are currently available for most project team members, and those members who do not have CorpsMail addresses are urged to get one. This is proposed as the preferred method of communication within the team. Team members present at this meeting, plus Cathy Ballard of WES, are the key contact individuals for information on the project.

9. Action Items. Several items were noted during the meeting that require action by project team members. These action items are listed by individual below:

- |                   |   |  |
|-------------------|---|--|
| Dave Harmon       | • | provide sample graphics for scenario analyses to Michael Walsh |
|                   | • | provide OMB91 data to Michael Walsh                            |
| Dick Males        | • | provide COMB_DSS 0.5 to IWR by 9 Dec 91                        |
| Connie Raaymakers | • | provide plan of study on interim system work to project team   |
| Steve Scott       | • | distribute FY 92 funds for IOMT work                           |
| Craig Strus       | • | provide draft paper on current ABS process by 21 Oct           |
| Michael Walsh     | • | provide OMB 91, 92 data to Males                               |
|                   | • | provide OMB91 data to Cathy Ballard                            |
|                   | • | acquire ORACLE 6.0 for evaluation and testing                  |

Michael R. Walsh  
Civil Engineer

Memo To File: ABS DSS  
From: R. Males  
Re: Follow-up to meeting, 10/19/91  
Date: 10/15/91

1) On 10/8/91, R. Males, C. Strus, and M. Walsh met to follow up on the previous day's meeting on the ABS DSS. In general, it was agreed that work would proceed, using the existing R:Base database, with emphasis on restructuring the database in accord with suggestions at the meeting, and development of scenario and financial analysts. At the same time, work will proceed on developing an ABS explanatory document, essentially an extension of the work developed by Hari Garbharran, to include a description of the existing ABS technical system. The document will include a description of the ABS process, database, analysis methods, and existing hardware/software environment. This document will be used in the system concept report. Paradox will not be examined further as a potential database platform.

2) The following is a list of action items (highest priority denoted with \*):

- Check \$'s and other facts in database with Dave Harmon (MRW)
- Check out Forest & Trees (MRW, RMM)
- \*Check out Oracle 6.0 (MRW/RMM)
- Obtain '91/'92 data from Dave Harmon (MRW)
- Prepare Memo on 10/8/91 meeting (RMM)
- Locate CorpMail local telephone numbers (MRW)
- \*Restructure ABS Database (RMM)
- \*Develop 'Version 0.5' of DSS (RMM)
  - Explore matching existing reports
  - duplicate existing scenarios
  - Writeup on Scenarios/Financial Analyst
- Send ABS R:Base database to CS (RMM)
- \*Examine Graphics from R:Base (CS)
- Follow-up with Dave Harmon on example desired graphics (RMM)
- Contact Cathy Ballard (MRW)
- \*ABS Writeup Outline (CS)
- Copy of Budget EC to CS, RMM (MRW)
- Explore rank generation (CS/NG)
- Contact R. Palmer on ranking comparison technologies (RMM)

3) The following are key milestones for the next steps of the project:

18 October 91	Outline of ABS status report
18 November 91	Draft of ABS status report available
1 December 91	Version 0.5 COMB-DSS demonstration meeting with Dave Harmon (R:Base)
15 January 92	Version 1.0 of COMB-DSS available

Memorandum for Record  
From: R. Males  
To: COMBESS File  
Re: Meeting at IWR, 12/16/91

1) On 12/16/91, R. Males, M. Walsh, and D. Harmon met to review progress to date on development of the prototype DSS for budget ranking. R. Males demonstrated version 1.0 of the prototype. This version emphasizes scenario building and evaluation. This system, implemented in R:Base 3.1b, provided the following functionality:

- a) menu and forms-driven interface to specify scenarios, edit them, and evaluate them
- b) scenario building capability with primary scenarios and composite scenarios, wherein a primary scenario is specified by selection criteria on individual work functions, and composite scenarios are combinations of previously defined scenarios (either primary or composite)
- c) evaluation of a given scenario through calculation of financial impact
- d) storage of roll-up financial information by division, fccd, and project class

The system was developed in accordance with R. Males design memo of 12/10/91.

The overall data flow, database concept, and functional capabilities were reviewed. In general, the structure was approved as being suitable to the task at hand, and flexible. Issues relating to increased functionality, speed issues, and future formats of implementation were discussed.

2) Following are comments relating to the design, that need to be addressed in version 1.1:

M. Walsh noted that CWIS codes are only unique within a Division, and questioned whether the existing structure for including/excluding CWIS codes was adequate. D. Harmon indicated that 95% of CWIS are unique Corps-wide, 4% are used for Corps-wide activities, and at most it are re-used across Divisions, for possible conflict. Accordingly, no change in the current methodology is needed.

M. Walsh suggested the possibility of treating Division and Project Class specification in primary scenarios in the same manner as CWIS, FCCD, and OCE rank include/excludes are currently treated, i.e. through entry of multiple detail lines, rather than as a set of fixed fields, as in the current implementation. This can readily be handled.

M. Walsh noted the likelihood of other parameters being included in the future in primary scenario specification, and suggested that the design be as flexible as possible, to accommodate this.

M. Walsh noted that the existing composite scenario functionality can be utilized to generate lists of work functions that differ between scenarios, i.e. work functions in scenario A that are not in scenario B.

D. Harmon noted the need to be able to review the description and funding argument fields associated with a work function. This can be accomplished through an appropriate view definition.

Cumulative cost information is desired when a scenario is evaluated, and should be retained. At present, the information is calculated for use in screening out work functions based on a cumulative cost limit, but is not stored in the data base. The cumulative cost calculation program should terminate after the desired total is reached, rather than cranking through all work functions in the scenario.

Speed can be increased by using flags, in the primary scenario, to indicate whether processing of includes/excludes should be done. This

requires the user to specify these flags for the scenario. There are advantages and disadvantages to using these flags, in that the flag specification must be maintained. The proposed solution is to allow for the flags, but to warn the user when flags indicate no processing, but data to be processed for includes/excludes is present.

The prototype structure favors developing scenarios in parts. Certain work functions are expected to be 'always in', while others will be 'always out'. The work functions that do not fall into either category, those on the margin, are the ones to be examined most closely. Methods for facilitating this approach need to be explored.

The report format for the temporary scenario needs to be revised, such that rank is in the first column, and no decimal fields are present for \$ amounts. The FUNCID field needs 4 characters.

The 'save temporary scenario' functionality needs to be modified. Currently, data tables are loaded based on user response to prompts. Various portions of the save functionality need to be broken out as separate items.

The current structure is in error in terms of financial rollups, in that rollups need to be done separately, by appropriation. Currently, appropriation is not separated out. In addition, the history data (1989) needs to be rolled up in this format as well as the other data.

An 'output measure' field needs to be added to the work function, and a selection capacity for this field included in the primary scenario selection process.

An additional method of scenario specification, through direct entry of stored SQL, was demonstrated in concept. This should be implemented, and become the third method of scenario specification.

3) The next iteration of the prototype will again be written in R:Base 3.1b, incorporating the above suggestions, and dealing with additional issues of financial analysis. In addition, attention needs to be given to rank generator/rank builder functionality, in particular for methods of re-ranking that preserve district rank orders.

4) Forest and Trees software will be used to demonstrate additional, graphics oriented DSS capabilities using the Windows environment and the existing database. The software works off R:Base data bases, or SQL server databases. M. Walsh will be exploring this technology on another project, and will provide guidance.

5) M. Walsh will be obtaining a copy of Oracle 6.0, for evaluation as a platform for the DSS. The key issues relate to speed and flexibility of development tools. Oracle 6.0 is also quite demanding of PC resources (35MB hard disk, 8 mb memory). If the evaluation proves positive, a switch will be made to this environment. The work to date in R:Base has been very consistent with SQL approaches, and should transfer readily to other SQL environments. If Oracle 6.0 is not suitable, it is intended that the DSS be maintained in R:Base. The prototype is to be used, in a PC environment, for the summer 92 budget ranking process. Thus, only these two choices (R:Base and Oracle) will be considered at present in the prototype development process, with a go-no go decision made on Oracle at the earliest possible time.

6) The role of CERL in support of the process was discussed. The specific data structures that need to be obtained from the mainframe Oracle ABS database for '94 data need to be defined, such that CERL can prepare and test the necessary download and import capabilities. Much of this information is close to definition, and no particular problems are expected in this arena. The question of providing support to D. Harmon during the '94 budget ranking remains for discussion (CERL, contractor, or a combination), as does the role

of additional IOMT funding for further development of this effort, vs. funding by D. Harmon's group.

7) The next iteration of the prototype, in R:Base, is expected in late January, at which time a project meeting involving all participants is to be scheduled at IWR. M. Walsh will schedule this in early January.

Corps O&M Budget Decision Support System  
Second Meeting  
0900 23 January 1992  
Water Resources Support Center  
Casey Building  
Fort Belvoir, VA 22060

AGENDA

IX. Current Status of Automated Budget System (ABS) under ORACLE

A. Database Structure and Data

1. Tables
2. Views
3. Forms
4. Reports
5. Triggers
6. Command files (SQL, C)

B. Import/Export Procedures

1. Status of PC ABS
2. PC-ABS to ORACLE exchanges

C. Communications

1. PC Asynchronous
2. CEAP terminal connections

X. Status of the COMB-DSS Prototype

A. Review of Version 1.0

1. Concept
2. Tables
3. Views
4. Forms
5. Reports
6. Data Dictionary
7. Command Files

B. Demonstration of Version 1.1

C. Discussion of Future Versions

1. Scenario Builder
2. Financial Analyst
3. Rank Generator
4. Criteria Analyst
5. Statistical Analyst

**XI. The ORACLE Question**

**A. Suitability of ORACLE Database for DSS**

1. ORACLE on CEAP computers
2. ORACLE Database and Tools for MS-DOS Version 6.0

**B. Development Tools**

1. ORACLE Tools
2. SQL Windows - Gupta
3. EASY-SQR - Sybase

**C. Communications**

1. Access to Database on CEAP
2. Client-Server Approaches

**D. Pros and Cons of Moving to ORACLE now**

**XII. Other Items**

**XIII. Schedules**

**XIV. Action Items**

- A. CERL
- B. IWR
- C. PMCL
- D. WES
- E. Next Meeting

## MEMORANDUM FOR RECORD

**SUBJECT:** Second Meeting of COMBDSS Project Team

1. The second meeting of the project team that is developing the Corps O&M Budget Decision Support System (COMBDSS) was held at the Institute for Water Resources on 23 January 1992. The primary purpose of the meeting was to review progress on the prototype COMBDSS. Attending were: Dave Harmon, CECW-OM; Steve Cone, CECW-P, Ed Japel, CECER-FS, Connie Raaymakers, CECER-FS, Cathy Ballard, CEWES-ITL, Steve Scott, CECWES-HE-E, Bob Athow, CEWES-HE, Michael R. Walsh, CEWRC-IWR; Richard Males, RMM Technical Services, Inc.; and Craig Strus, Planning and Management Consultants Limited. The agenda for the meeting is attached.

2. **Current Status of ABS Under ORACLE.** Cathy Ballard described the status of the port of the ABS database to ORACLE. All the tables in the database have been moved to ORACLE with very few changes. Many of the forms that are needed to enter and edit information into the tables are also completed. Conversion of the COBOL programs that provide for import and checking of data from the field will begin shortly. Cathy will supply the rest of the team with a description of the tables, forms, reports, etc. that are in the ported database. Cathy also said that she could develop export procedures to provide the data for the COMBDSS in the same fixed-field format that Dave Harmon provided to populate the database initially.

Connie Raaymakers and Ed Japel described the minor changes that are being made to the micro ABS and the communication links to the CEAP machine. Minor JCL changes are needed for the new machine. No problems are foreseen here.

3. **Status of COMBDSS Prototype.** Dick Males gave a thorough presentation of the overall structure of the COMBDSS and provided a demonstration of the prototype version 1.0. The prototype is being built under RBase 3.1b and is a menu-driven application. The prototype has a fully functional scenario builder and the beginnings of a financial analyst, the two most important modules defined at our last meeting. Most of the comments during the demonstration were directed at the "look and feel" of the prototype and not the underlying logic or concept. Dick will address the "look and feel" issues in the next version of the prototype. Each development team member will be given a copy of the prototype to investigate on their own. Comments on the prototype version 1.0 should be sent to Michael Walsh by February 14. This is necessary to provide enough time to incorporate the comments into the next version of the prototype to be reviewed at our next meeting on March 12.

Initial modules for the rank generator and criteria analyst will be provided in the

next version of the prototype. Any ideas on the structure or design of these modules should be provided to Dick Males. The statistical analyst is the lowest priority module and not well defined. Michael Walsh will work on developing the concept and design for this module.

**4. The ORACLE Question.** Michael Walsh obtained the PC version of ORACLE Database and Tools for evaluation. The ORACLE database is certainly capable of handling the database component of the COMBDSS, but the tools are more difficult to master. The discussion centered on whether we should try and move to ORACLE as the development environment for the COMBDSS. After weighing the pros and cons, the consensus of the group was to continue the development of the prototype under RBase and consider additional options, such as client/server approaches for the next cycle. There are a multitude of front-end tools being announced every day, but the technology is still very new and likely to be fraught with problems. Given the functioning of the early prototype it is evident that the COMBDSS under RBase will be able to accomplish the tasks that occur during the analysis phase of the ABS process. The design of the COMBDSS uses "vanilla SQL" as much as possible to allow for eventually porting to ORACLE with the COMBDSS being developed by whatever front-end tool we can get to work within the CEAP environment. Ed Japel suggested that we talk to Craig Bigelow, NPD about client/server possibilities.

**9. Action Items.** Several items were noted during the meeting that require action by project team members. These action items are listed by individual below:

- |                   |   |
|-------------------|---|
| All               | <ul style="list-style-type: none"><li>• Review COMBDSS Version 1.0 and return comments to Michael Walsh by Feb 14</li><li>• Provide comments on ABS Existing System Document to Craig Strus by Feb 7</li><li>• Note next meeting on March 12 at Headquarters or IWR</li></ul> |
| Dick Males        | <ul style="list-style-type: none"><li>• Provide COMBDSS Version 2.0 for March 12 meeting</li></ul>  |
| Connie Raaymakers | <ul style="list-style-type: none"><li>• Provide information on transfer mechanisms from field to ORACLE to Craig Strus</li></ul>  |
| Craig Strus       | <ul style="list-style-type: none"><li>• Revise ABS Existing System Document and distribute to development team by Mar 2</li></ul>   |
| Cathy Ballard     | <ul style="list-style-type: none"><li>• provide initial documentation about ABS database under ORACLE to Michael Walsh</li></ul>  |
| Michael Walsh     | <ul style="list-style-type: none"><li>• Check on client/server capabilities within the CEAP environment</li><li>• Provide information on statistical analyst for next meeting</li></ul>   |

Michael R. Walsh  
Civil Engineer

Memo To File  
From: R. Males  
Re: New Features, COMB\_DSS Prototype Version 3  
Date: 3-10-92

- 1) The latest version of the prototype system is a significant departure from prior versions. Enhancements have been made to allow for greater speed of processing, simplicity of concept, and flexibility. The major changes are detailed below.

- 2) **Work Function Numbers**

Each work function is now assigned a unique integer number. This information is stored in the 'wf\_num' field, which has been added to the OMB93 table. These numbers were assigned, starting at 1, in ascending OCE rank order. They are arbitrary numbers, and are used to provide faster access in terms of keys and views, and to allow for external processing of stored scenarios, as described below.

- 3) **Expansion of OMB93 table**

The previous version made use of a sub-set table (OMBALL1) derived from the original OMB93, expanded by inclusion of the division name, project class, and low use navigation project code. The new version expands the OMB93 table to include these fields in the table itself, as well as the following additional fields:

wf_num	integer	work function number
user1	integer	user defined
user2	integer	user defined
newrank	integer	for future rank generation
level	integer	for future rank generation

Thus, all fields that are used in the scenario selection process are now included directly in the records for OMB93.

- 4) **Use of Scenario Numbers**

As described below, new processing methods require the use of a unique work function number, as well as the assignment of unique integer scenario numbers in the required range (currently 1 to 47) in addition to the current scenario names.

- 5) **Replacement of PERMSCEN by External Bitmap Data File**

The initial design maintained a PERMSCEN table, that stored each work function present in each scenario. Processing of composite scenarios proved to be slow, use of views against this table proved impractical, and the table could potentially grow quite large. The whole purpose of the PERMSCEN table was to record whether a given work function was in a given scenario. Due to the problems with the PERMSCEN table, other methods were examined.

A work function's status in a given scenario can be stored in a single bit, as a 1 (work function is present in scenario) or 0 (work function not in scenario). This suggested the use of bit fields as a compact method of data storage for this information. A table could be created, with a row for each work function, and columns representing the 1/0 flag, for as many columns as the maximum expected number of scenarios.

This possibility was examined within R:Base. The minimum field length for a field of any type in R:Base is 4 bytes. Given the existing size of the OMB93 table (approximately 20,000 rows), and the expected maximum number of scenarios (approximately 40), this would lead to a data storage requirement of 3200k bytes, and entail slow update processing

through R:Base.

The new release of R:Base, version 3.1c, allowed for user-defined C functions that could be accessed from within an R:Base program. This suggested the possibility of using the integer field to store not simply a single value (1 or 0), but rather a bitmap that could store up to 16 values, and be parsed out as needed. That is, in a single column, the flag status for up to 16 scenarios could be stored, reducing the needed data storage requirements. This approach was tested, but again, the overhead of doing update processing within R:Base proved to be excessive.

The current method uses an external data file that simulates a table with bit-wide columns, and a set of external C programs that set and read bits to indicate work function status. Communication with R:Base is possible through use of the R:Base 'zip' command that allows for running of external programs from within the R:Base environment. Using this method, an external binary data file is created, with a single record for each work function. Currently, each record is set at 48 bits wide, allowing for the storage of 48 scenarios. Using this compact form of representation, the required file size is 126k for 21,000 work functions. (Note that it is not necessary to store the work function number, as this is implicit by the record position in the file). C programs (detailed below) to process this data file to read and set bits range in size from 8 to 14k, and can process the entire file in under 15 seconds.

In practice, a 'permanent' scenario is now a 'stored' scenario. A scenario is stored when the bit for the scenario column is set to 1 for each work function in that scenario. The use of work function numbers allows for handling this very simply.

By way of example, the bitmap file can be viewed schematically as:

wf_num	s1	s2	s3	s4	...	...	s48
1	1	0	1	0	...	...	1
2	0	0	1	0	...	...	0
3	0	0	0	0	...	...	0
4	1	1	1	0	...	...	1
5	1	1	0	0	...	...	0
...	...	...	...	...	...	...	...
21,000	1	1	0	1	...	...	0

Under this example, work function number 1 is present in scenarios 1, 3 and 48, while work function 5 is present in scenarios 1 and 2.

Using this form of representation, it is easy to set all bits for a given scenario, knowing the scenario number and having a list of the work functions. Similarly, it is simple to generate a list of all work functions in a given scenario (by writing the work function numbers to an ASCII file), and to perform boolean operations to set a bit for a work function based on other bits for that work function (as in creation of composite scenarios).

6) Functionality for programs manipulating the bitmap file

The following are the functionalities for the current suite of external C programs that manipulate the bitmap file, and the method by which they are invoked at the DOS command line. (The suffix numbers in the program names are the current development version numbers of each program, and may change before finalizing the functionality). Note that these programs operate entirely independently of R:Base, but mechanisms have been created to pass information between the two data storage formats,

**CREATE BITMAP FILE:**

**Usage: BUILDFL5 number\_of\_records**

Given a scenario number, and an ascii file containing a list of work function numbers, set the corresponding scenario bit on;

**CLEAR A SCENARIO:**

**Usage:** CLRSCN4 scenario\_number

**For a given scenario, generate an ascii file containing a list of work function numbers that are in the scenario;**

### GENERATE A COMPOSITE SCENARIO FROM OTHER SCENARIOS:

**Usage: COMPSCN3 scenario number add delete file name**

Read through the file, and display, for each work function, the scenarios that are set;

**READSCH1:** generates a list of the numbers, e.g.

indicating that work function number 56, 59, and 65 are in scenarios 5 and 16, and work function 574 is in 16.

**READSCN2:** generates a bit array, e.g.

[illegible]

7) Method of Communication of BitMap Programs with R:Base

The bitmap programs are activated from within R:Base through the 'zip' command, as noted previously. The actual bitmap file name is 'hardwired' in as DSSBTMAP.FIL. Scenario numbers are passed in on the command line, as are file names.

When it is desired to store a scenario that is in the TEMPSCEN table, the COMB DSS generates an ascii file containing all the work function numbers from the records in the TEMPSCEN table, and then executes the STORSCN1 program, passing this file name, and the scenario number, as parameters. When information needs to be passed back to R:Base, to obtain a list of work function numbers in a given scenario, the DUMPSCN1 program is activated, passing the scenario number and the desired name of the output file on the command line. DUMPSCN1 then generates an ascii file of work function numbers in the scenario. The R:Base 'load from filename as ascii' command is then used to load this information back into the database system. To this end, a new table has been created, WF\_NUM, consisting of a single field, wf\_num (work function number). In this manner, it is quite straightforward (and fast) to move information between the two storage formats.

8) Use of work function numbers in views and sub-selects

The above noted functionality allows for the creation of a view between the OMB93 table and the WF\_NUM table. Recall that the WF\_NUM table stores information retrieved from the external bitmap file. The view WFVIEW is defined on these two tables, giving access to all the fields in OMB93 that are present in WF\_NUM. Because both tables are keyed on the integer wf\_num field, the view processes rapidly.

In addition to the view, the use of work function numbers allows for simple editing of the work functions in OMB93, based on either a recalled stored scenario, or on the work functions in the TEMPSCEN table, by use of a sub-select, e.g.

```
EDIT ALL FROM OMB93 WHERE WF_NUM IN (SEL WF_NUM FROM TEMPSCEN)
```

9) Status Table

Groups of work functions may now stored in either of two tables: the WF\_NUM table, and the TEMPSCEN table. In order to allow the user to keep track of what scenarios each table represents, a STATUS table has been defined, that keeps track of the scenario name, and date and time of loading, for the WF\_NUM and TEMPSCEN tables. A menu option permits the display of information in this table, to remind the user of what scenarios are represented in the two tables.

I. Points by Dave Harmon

- A. Ability to Do intersections when creating composite scenarios
- B. Financial Analyst Reports
- C. Summary Reports
- D. Ability to Show description and funding argument when running report for temporary and permanent scenarios
- E. Summary tables for omb91 and omb92 need to be rolled up by division and fccd
- F. Harmon to order R:Base
- G. RHM to provide specs for files to be downloaded
- H. Meeting with Jim Crews and John Perez to discuss rank analyst. 6-10 April

- II. Add PCCD Prefix Titles to Evaluations Report
- III. Index Tempecen on DIVNAM, Projcls, PCCD
- IV. Make # of ints in bitmap file a define
- V. Add edit of title tables to system
- VI. pick which ones you want to see in scenario evaluation report
- VII. warn on overwrite of tempecen
- VIII. check on cumulative costs - make sure that is in fact leaving the correct entries in when deleting
- IX. Generate cumulative cost - separate functionality
- X. Report by cumulative cost (by division, by ocerank)
- XI. Change manage scenarios prompt in app to picklist
- XII. Intersect scenario
- XIII. In financial reports, 7 columns (format 9,999,999)
- XIV. messages throughout to let user know something is happening (or confirm) in particular, export
- XV. DIV PCCD Prefix Rollup Table
- XVI. Make 64 scenarios max
- XVII. Initial screening command file - tallies
- XVIII. Data Checking command file - for downloads
- XIX. Expect 1st download in mid-july
- XX. In logic for primary scenario, work with ands between groups, ors within.
- XXI. Check SQL functionality - see what problem is in testsql
- XXII. confirm message to process SQL
- XXIII. see why newpage in run sql
- XXIV. add save option to menu in enter
- XXV. clarify when things get saved.
- XXVI. possible functionality - show generated sql, save generated sql
- XXVII. needed functionality - clone sql

## MEMORANDUM FOR RECORD

SUBJECT: Meeting on COMB\_DSS Version 1.3

1. Dave Harmon, Dick Males and I met on 16 March to review COMB\_DSS Version 1.3. This meeting was held in lieu of a general meeting of the development team. The next meeting of the development team will be held in conjunction with the IOMT Field Review Group meeting in Portland during 22-23 April 1992.
2. The COMB\_DSS Version 1.3 has been streamlined to make it easier to create, store and evaluate many scenarios, and the processing speed has been increased by using 'C' programs in conjunction with the R:Base database system. We now have the capability to produce scenarios based on any attribute of a work function, such as funding level, FCCD, or District. I have attached a memo by Dick Males describing the new features of the COMB\_DSS Version 1.3. I have also attached a schematic drawing of the table and view structure dated 3/11/92.
3. We also discussed a proposal for ranking scenarios. The general idea is to give a score to each scenario and, by association, to each work functions that falls within the scenario. An aggregate work function score is calculated for each work function according to a weighting scheme and the work function scores partition the set of all work functions into sub-sets or groups. All work functions with the same score are placed into a group. Work functions can then be ranked within groups using a variety of algorithms to create a new overall ranking. For example, all work functions within a group can be ranked according to original division rank. This new method works with sets of work functions (scenarios) instead of individual work functions. It could make the evaluation process more manageable. I have attached a short description of the re-ranking procedure written by Dick Males. Dave thought the proposal had promise, but asked us to talk to Jim Crews and John Perez about the idea. He also thought we should get some feedback from the Field Review Group.
4. Based on this meeting we are going to make some technical changes to COMB\_DSS Version 1.3, continue to develop the scoring proposal for scenarios, and get ready for the summer test of the COMB\_DSS with FY 94 data. The final attachment is a memo summarizing the details of the meeting and specifying work to be done.
5. Please let me know your reaction to the new version of the COMB\_DSS, the proposal for scoring scenarios and anything else on your mind about this project. If anyone wants a revised version of the COMB\_DSS before the Portland meeting, let me know.

Michael R. Walsh

## POTENTIAL EVALUATIVE (RE-RANKING) PROCEDURES

Two general methods for ranking work functions are formal combinatorial ranking procedures, and 'grouping and assessment' procedures. The latter approach appears to be the preferred method for the new ABS ranking process.

In formal combinatorial methods, points are awarded based on the values of various factors for each work function and then these factors are weighted and the total score calculated for each work function. Work functions are ranked according to their score. In grouping and assessment procedures, methods are used to select work functions that fit into various groups based on values for selected factors and then these groups are assessed and work functions ranked based on their placement in a group or multiple groups.

For either method, it is key that factors are defined for each work function that reflect the desired decision variables. For example, if HQ wishes to minimize the risk of environmental disasters, then a factor is required for each work function that measures the potential risk. Following are several factors that may be useful in any national ranking procedure:

- Measures of the potential of risk and the extent of risk to safety, environment, and monetary damages associated with not funding a work function in the present year. The potential of risk reflects the present condition of the facilities and how that could affect the chances that some negative impacts will occur if the work function is not funded. The extent of risk is a measure of the potential level of negative impacts.
- Potential contribution of the work function to possible national goals such as improving the environment, increased recreation, improved navigation safety. These factors could change each year to reflect national goals or could remain constant and then be 'weighted' differently in the ranking procedure based on national goals. Additionally, it is possible that these factors could be derived in part based on the work function category associated with each work function.

The 'scenario' approach utilized in the COMB DSS is an example of a grouping and assessment procedure. In this approach, a work function is identified as either being in or out of a particular basic scenario based on values of one or more factors for that work function. These basic scenarios may then be aggregated through boolean logic (e.g. all work functions in scenario A or scenario B but not in scenario C) to create composite scenarios. It should be noted that scenarios may be defined to reflect a positive (e.g. high Division preference) or negative (e.g. high costs) grouping from the point of desirability but that this judgement is explicitly made at the later assessment stage rather than at the grouping stage.

## RE-RANKING METHODOLOGY

The work functions initially receive 'bogus' OCE ranks, derived from funding levels and Division ranks. The ultimate goal of the existing budget process is to obtain an ordered list of work functions, and define a 'cut-off' rank above which all work functions are funded,

and below which work functions are not funded. In theory, as funds availability changes, this cut-off rank will move up or down the list of work functions, but the ordering of the list should not change. In the OCE ranking process, work functions are 'moved around' in the list (in regards to their original rank ordering) necessitating a re-ranking to obtain the final ordered list. The existing process in effect groups work functions into 'fund' and 'no-fund' groups, after which a re-ranking is required. An objective of the re-ranking is the preservation of lower level (Division/District) ranks, insofar as possible.

A proposed method of performing the re-ranking makes use of the scenario concept, and the bit map file that records the presence or absence of a work function in a scenario. At the start of the re-ranking process, then, it is assumed that we have all scenarios defined, we know what each of these scenarios means, and we have (in the bitmap file) the complete assignment of all work functions to scenarios. The initial goal is to partition all work functions into groups (with each group assigned a numeric 'score'), within which OCE is indifferent as to the relative position of the work function within the group. That is, scenarios are used to assign identical integer score values to work functions in the scenario.

Each scenario is assigned a numeric score (not to be confused with the funding level of 1, 2, 3, or 4), with the lower score representing the most desirable. Different scenarios could each be assigned to the same, or different, scores. Such a score would in some way reflect national policy, and the priority to be given to the group of work functions in the scenario. OCE, for example, might define a range of from 1 to 50 for scoring, and assign each scenario a value in that range. A 'Scenario Scoring Table' would hold the score to be associated with each scenario.

Once the Scenario Scoring Table is defined, the next step would be to assign scores to the individual work functions. If a work function is in only a single scenario, it would be assigned the score of that scenario. If a work function is in multiple scenarios, other alternatives are possible. A work function could be assigned a score based on the lowest score for any scenario in which it is included.

Alternatively, if, in the re-ranking process it is desired to recognize the value of a work function being included in more than one scenario, a work function's score could be the sum of levels for all scenarios that it is in. Still another possibility is to assign weighting factors to scenarios, and develop a score based upon the individual scenario scores and weighting factors, for each scenario in which a work function is located. These options depend upon the manner in which scenarios themselves are defined (do they overlap, or are they completely disjoint sets of work functions?) and used.

In any case, once the work function score has been determined, the work functions can be ordered by this score. If, as in the example above, a range of 1 to 50 is defined for the score, this will define 50 groups, within which OCE is indifferent as to the local ordering. At this point, any of a number of algorithms could be used to provide a distinct ordering within the score group. If, for example, Division rank is to be preserved within a score group, then an algorithm similar to the bogus rank assignment process could be used. A 'shuffling' procedure, based on developing sets of work functions in a group by Division (ordered by Division rank), and then grabbing work functions from each Division in

sequence (with the se-sequence randomized for each pass through), would provide a measure of fairness. Other factors could be developed to do the 'within score group' ordering, based on information stored in each work function's record.

In keeping with the modular concept of the COMB DSS, and the 'grouping and assessment' approach, once a final re-ranking has been determined, it could be passed through a Rank Analyzer Module. This module would examine the ranked list, and point out defined anomalies, i.e. situations in which a less desirable Division ranked work function has been placed, in the final list, ahead of more desirable work functions. In this manner, the impacts of the re-ranking could be examined, and alternative re-rankings investigated. Inasmuch as this process now comes down to re-defining the scenario scores, and perhaps cross-scenario weights, and given the relative speed of the rank generation and assessment, it should be possible to explore a number of alternatives during the re-ranking effort.

In summary, the proposed re-ranking design requires an indifference to the detailed ranking of work functions within score levels. Through use of the scenario concept, and appropriate definition of scenarios, it should be possible to readily define score groups, perform re-ranking, and assess the results of the re-ranking. There should be no great difficulties in rapidly developing prototypes of the re-ranking and rank analyzer software. Obviously, considerable experimentation will be required to learn to use and fine tune this approach.

To: C. Strus  
From: Dick Males  
Re: Required Specifications for Division-Rank Preserving Algorithm

- 1) The proposed ranking methodology involving scenarios, scenario scores, and work function scores has been outlined previously, and is shown schematically in the accompanying wpg files. In effect, each work function will end up with a non-unique integer work function score, assigned from the scenarios. The problem is to define unique work function ranks that respect the division ranking. Thus, the basic input to the algorithm is a list, as follows:

wf_num	division	wf_score	div_rank
234	NAD	3	23
256	NAD	4	17
..			
..			

The work function score is expected to be an integer probably in the 1 to 100 range (1 better). The division rank and division are the codes currently in the ABS database that you have. The work function number is the new, arbitrarily assigned integer number for the work function (I believe the version you have contains this work function number).

This list will be output as an ascii, fixed format file. I currently propose to sort the list by wf\_score descending, division, and division rank ascending. This will group the work functions by score, then by division, and then by inverse division rank.

- 2) The desired output is a list (ascii file) of wf\_num and unique integer ranks, starting at 1 and increasing (1 is better). This can then be input into the R:Base system for further processing. The output would be a fixed format file.

The algorithm I am proposing will act as follows:

- a) read all the work functions from the input list, for the current work function score, into stacks (one for each division), such that each division now has a 'pile' of work functions, with the best division rank on the top of each pile. (By ordering the input list in inverse division rank order, we can set up these stacks so that they end up with the best on top).
  - b) Randomize the divisions. Then pick up the work function on the top of each stack for each division, and put it in the output list. Re-randomize the division order and repeat, until no work functions are left in the stacks.
  - c) Read the next group of work functions at the next work function score level and repeat the process, until the input list is exhausted.
- 3) I do not see this as anything too complex at this time. I don't think it should take more than a day or two max to implement. The only tricky thing is keeping track of the input buffer at the end of each work function score group, that signals the change in work function score. This has to be kept around while processing the previous group, and then used to initialize the stack in the next group. Let me know what you think.

Date: 5/29/92  
To: Dick Males  
From: Craig Strus  
Re: Re-ranking

To better accomodate the possible ways the data might be sliced, diced, and scored, I have implemented the linked-list approach to allocation of memory. In testing the approach, I was able to define, for a given score and division, 18,XIX work functions. I think (hope) that beyond this, the user must rethink the slicing of data. The underlying problem is that we are running in real mode (I have about 580k free at the dos prompt). If this approach fails, two other options are available. The first option would be to write each stack to its own output file which assumes, as you mentioned previously, that the input file is ordered in opposite order. The second approach is to use a dos extender and perhaps Watcom or Zortech C++ in protected mode to access larger arrays.

The basic structure is as follows:

```
struct WFURStruct
{
    char      DivNam[4];
    long int  DivRank;
    long int  WfNum;
    long int  WfScore;
    struct    WFURStruct *LastNode;
    struct    WFURStruct *NextNode;
};
```

This holds all of the list elements for a given stack.

```
// The division stack pointers
struct WFURStruct DivIndex[MaxDivisions];
```

This points to the bottom of each stack for each division.

```
struct WFURStruct *GetWFUR;
struct WFURStruct *CurrWFUR;
struct WFURStruct *NextWFUR;
struct WFURStruct *LastWFUR;
```

These are pointers used to get memory, link elements together, and transverse through the lists themselves. The only pointer address that actually gets memory is GetWFUR. I hope this proves adequate. Please beat this up and let me know what you think.

Thanks,  
Craig

June 8, 1992

## MEMORANDUM FOR RECORD

SUBJECT: Meeting on COMB\_DSS Version 1.4

1. Dick Males and I met on 3 June 1992 to review the COMB\_DSS Version 1.4 prototype. We spent the day testing the functions of the COMB\_DSS in preparation for installing the prototype on Dave Harmon's PC. I tested the prototype by creating, editing and running several scenarios that selected different groups of work functions. We found some 'bugs' in some of the menu selection functions. Most were fixed on the spot, while some will be fixed in the next iteration of the COMB\_DSS Version 1.5. Dick will provide me with a copy of the new version by 19 June 1992.

2. Dick and I met with Dave Harmon on 4 June 1992 to install COMB\_DSS Version 1.4 on his PC and to discuss a plan of action for supporting Dave during the analysis phase of the budget process that will start after 15 July 1992. Dave's PC is a 486 50 MHz Compaq and the COMB\_DSS was able to generate rather large scenarios in less than 5 minutes. Overall, the processing time for generating, evaluating and reporting on scenarios is satisfactory. Further improvements in Rbase software will only speed the system.

3. After testing and fixing the system for some time, we discussed how to use the COMB\_DSS to assist with the currently defined process of work function analysis. We are quite certain that the COMB\_DSS can make the existing analysis process easier than in the past. We need to think more about how to use the COMB\_DSS to assist with analysis at sub-levels (more than 1,2,3 and 4) and to allow selection of work functions based on additional criteria, such as condition indices, economic benefits and other work function attributes. The scenario development and ranking procedures available in the COMB\_DSS will support a more detailed analysis, however, we really have to think about what analyses make sense to make better decisions about the budget.

4. I would like to have a meeting of the COMB\_DSS development team on 1 July 1992 at IWR to discuss the status of COMB\_DSS, develop a plan of action for supporting the O&M budget process and documenting the process to determine what we did right and wrong with the COMB\_DSS and to think about the future of the prototype after this budget cycle. The 1 July date will give us some time to make any minor changes to the COMB\_DSS and devise a plan for assisting Operations in using the COMB\_DSS before the 15 July beginning of the analysis phase.

Michael R. Walsh

Memo To File  
From: R. Males  
Re: Revisions to COMEDSS, Version 1.5, and Usage Notes  
Date: 6-16-92

- 1) Based on the previous memo (6/5/92), a number of changes were made to the COMEDSS. The new application is COMEDSSK. The status of the changes detailed in that memo are indicated below. All items other than those listed below have been completed:

- Check the revised SQL generation capabilities under a variety of circumstances, to insure that the generated SQL is proper and has the appropriate syntax; [more checking in next round of testing]
- Check possibility of automatically detecting the presence of wildcard characters in the add/delete/intersect forms, when generating SQL; [not implemented at this time]
- Change the display format of the total cost figures on screen, to remove the .00; [done where problem known to exist - not readily possible in browse screens, forms oriented viewing of workfunc table]
- revise reranking so that reranks increment by 3 instead of 1 [done - implemented as a variable, currently set to 3 in the command file]
- Develop documentation binder; [not done]
- generalize the command tree documentation program to accept any extension; [not done as yet]
- consider placing command on menu to re-establish the bitmap file; [decision not to do]
- consider database backup and checking commands for menu; [database checking implemented; stub program for database backup exists (on menu, but not implemented)]

Note that, because a variety of new command files have been created, the detailed programmer level documentation needs to be updated.

- 2) In the course of carrying out these changes, a number of structural modifications were made to the system. In particular, generation of the financial rollup reports with titles and break totals required a number of changes, as follows:

#### Use of Crosstab Tables for Reports and Export

A new method of developing the financial scenario comparison reports was implemented. The previous method was time-consuming, and for some cases, incorrect. The new method makes use of a modification of a technique presented in the R:Base Exchange Newsletter published by Microrim, in which the results of a crosstab command are loaded into a table. The crosstab table is generated by running a command file that generates a table in which each row represents the appropriate sum of dollars for division, fccd, fccd prefix, etc., for up to 7 scenarios. A report is then run against this table, allowing the proper definition of break totals. This technique proved necessary to get the proper break totals for the fccd prefix and fccd rollup reports, and operates more quickly than the previous method, so it was extended to all financial reports. The command file that performs the overall processing is SCENREP7.CMD, and CTAB4.CMD, called from SCENREP7.CMD, generates the crosstab tables.

Because the crosstab tables are built prior to running the reports, they are available for browsing from the 'browse any table' menu item. More importantly, this presents an alternative method of developing export tables, using the 'unload data as ascii' option, rather than generating a specially-formatted report. Accordingly, the export and report menus have been combined. Selection of either the export or report for a given report type (e.g. by division) will result in the generation of a corresponding crosstab table, from which the report is printed and/or the export data file is generated.

Note that this method of generating export data does not give all of the titles associated with each row of the report, simply the data items.

#### Title Table

A new table was created, 'scentitle' containing three text labels for each scenario, to be used in the reports. The 'Set/Edit Scenario Titles' on the 'Manage Scenarios' menu performs the following functions:

- a) the div\_s\_\$ table is scanned for any scenario names not currently present in the scentitle table, which are then inserted into the scentitle table;
- b) the third label (the bottom-most on the report) is then set to the scenario name, if the label is blank;
- c) the user is placed in edit mode, to allow for maintenance of the tables.

In this manner, the titles table will always contain the scenario names for all scenarios that have been stored, providing that the set/edit scenario titles option is selected.

#### FCCD Break Totals - Definition and Labeling

In order to provide the desired break totals on the FCCD and FCCD prefix reports, a new column, fccdbrk, was added to the FCCDPRTI (fccd prefix titles) table, to indicate the break level associated with each fccd prefix. Break totals in the fccd-based reports are triggered when this value changes. The values can be edited through the 'browse any table' option.

The title to be applied to the break total on the report (e.g. 'Sub-Total for Operations' for break level 1) is found in the brktitle table, which can again be edited through the general browse option.

#### Re-Rank Evaluation Reports

The requested reranking evaluation reports have been created. The 'out of order' report is now an exception report. A report for 'waiver moves' gives work function information for work functions that have been moved into or out of the waiver level. A report on level moves similarly gives work function information for work functions that have changed funding levels. Proper functioning of these reports requires that scenario scoring be assigned based on a strategy of assigning two-digit scores within funding levels, e.g. all scenarios desired to be in funding level 1 must have their scenario scores from 10 to 19; similarly, all scenarios to be maintained in waivers must be scored 28 or 29.

An additional report has been created to generate a report on work functions within a user-specified range of generated ranks (newrank). This report also provides a list of all of the scenario numbers that the particular work function is in. This is accomplished through the R:Base

User Defined Function (UDF) feature, that allows a C routine to be called from within R:Base. In this case, a C program has been created to read the bitmap file for a given work function number, and return a list of the scenario numbers that are set for that work function. [The capability to provide scenario names, rather than scenario numbers, was requested by Mike Walsh. This capability was created, but is more time-consuming than the generation of scenario numbers. If desired it can be implemented in place of the numbers.]

Each of these reports provides detailed information about each work function that appears in the report, based on information in the workfunc table. This information is obtained through the use of the WFINFOL.CMD command file, which obtains, formats, and outputs the information for a work function. Accordingly, if the present output format of workfunc information needs to be changed for these reports, the changes are localized to this particular command file.

#### Speed Considerations

Most of the operations are tolerable in terms of speed, if implemented on a 486 machine with adequate memory, and use of a disk cache. Processing small scenarios is fairly quick, while larger scenarios are more time-consuming.

Certain operations, particular those that are based on the wfscr view (the view that joins the wf value and workfunc tables), can be slow, particularly if sorting and/or grouping is desired. These operations are primarily used in the reporting on work function scores and in the re-ranking generation and evaluation.

**Memo To File COMEDSS**  
**From: R. Males**  
**Date: 7/2/92**  
**Re: Meeting at IWR, 7/1/92**

- 1) A review meeting for the COMEDSS project was held at IWR on 7/1/92. Attending were: Ed Japel, Connie Raaymakers, Steve Scott, Mike Walsh, Dave Harmon, Craig Strus, and Dick Males.

Progress since last meeting was reviewed, and the major technical changes to the system were described.

- 3) Dave Harmon outlined the general timetable for preparing the budget submission. On 7/17, the reclaims should be completed. On 7/22, John Elmore is to be briefed with an initial scenario analysis. On 7/24, a briefing is scheduled for Steve Dola in the ASA office. Per Dave Harmon, last year, 3 scenarios were examined - a 10% cut, a 5% cut, and a recommended budget.

From 7/24 through 7/31, additional modifications and analysis of the budget are made. Most of the higher-level input is not at the work function level, but rather as a request for an % cut or increase by fccid, class, or division.

Dave Harmon has, in the past, generated scenario analysis once a week during this period, with the interim time used for analysis of the results.

Development of the new ranking is done in the last part of August.

Dave Harmon expects approximately 21000 work functions in the submittal this year.

- 3) The desired product of the IOMT work unit for this fiscal year, in addition to the actual COMEDSS, will be a brief report, containing the system concept and design, a description of the implementation, a summary evaluation of the results of the implementation, and suggestions and guidance for further work. Appendices to this report will contain the previously-produced description of the ABS process, documentation of the COMEDSS system, and the assessment report on the implementation process. A debriefing meeting on the project will be held late in September, or early in October. Methods of informing the Divisions of the status of the work were discussed. The annual budget conference (Seattle, March 93) was suggested, or, alternatively, a fall time frame workshop. discussed.
- 4) Various strategies and approaches to performing the analysis using the COMEDSS were discussed. A 'dry run' to test the process, using the currently available '94 workfunction data (prior to reclaims/corrections), was suggested, in the week of the 13th of July, to test the technology, develop scenarios, and devise strategies for the analysis. The developed scenarios would then be re-run with the final work function data, once it became available. The 'dry run' was approved.
- 5) A demonstration of the major features of the COMEDSS Version 1.5 was presented by Mike Walsh. During the course of this presentation, some modifications and revisions were defined, as described below.
- 6) Following the meeting, Dave Harmon provided the revised 1994 data, including all rollups, and the currently available '94 workfunction data. Old data was cleared out of the COMEDSS, new data imported, and a '94 database was prepared, as the starting point for analysis. A number of tables were eliminated from the database, per Dave Harmon, as not being needed for the analysis (purpose, history, reason, year, interest,

fundlev, and dredge). Data for the tables catfeat, cattit, project, workfunc, and the rollup tables (div\_s\$, fccd\_s\$, fccoddiv\_s\$, and pcis\_s\$) were imported, using Gateway, based on Dave Harmon downloads.

7) Action Items

Dave Harmon will verify certain data noted as problematic in the download process. Mike Walsh will work with the '94 database for further testing. Dick Males will make the needed modifications to the system (see below). Dick Males, Connie Raymakers, and Mike Walsh will attend the 'dry run'. Craig Strus will take the lead on developing the COMEDSS documentation package.

Dick Males will provide Cincinnati Chili recipes/spices to Steve Scott, Craig Strus, and Connie Raymakers.

8) System Modifications

- Additional scenario report - major class breakout
- Check on number of available scenarios (should be 128)
- Place available numbers pick list in cloning functionality
- Check on issue of rules on/off for insert of composite scenario, see about method of speeding up this process
- check when bit is set in composite scenario generation
- add default scenario title line in scenario titles table after the scenario is stored
- delete temporary tables after they are no longer needed, to minimize number of tables in database
- add a new field to the workfunc table (other, for cost breakout)
- look for methods of speeding up the logic checks, and eliminate the checks on the year table.
- examine the system (forms/reports) for use of the nint function, and replace this with the proper form for determining the fccd prefix.

To: Mike Walsh, Dave Harmon  
 From: R. Males  
 Date: 7/5/92  
 Re: Modifications to Version 1.5

The following modifications to version 1.5 were specified in the previous memo. This memo documents these changes, and any issues associated with them. Item 1, relating to the major class breakout, needs attention, as described below. Running the logic check revealed some problems, that need attention. Note also the revised usage for the composite scenarios (item 12 below). The final two items (11/12) were not mentioned in the previous memo, but were discussed as needed changes at the 7/1 meeting.

1) Additional scenario report - major class breakout

The major class breakout report was added, in both print and export formats, to the list of financial reports. The major class breakout report is based on the project class crosstab table (PCLSXPRN). This table is used to generate a new driving table for the major class breakout report, based on a two step process, in which a temporary table is created by a join of PCLSXPRN with the CLASS table, which has been modified to contain the needed class numbers. This temporary table then provides, for each project class, the associated four digit class numbers needed. An insert select based on these table, grouping by class number, is used to build the MAJCLSEK table, which is the driving table for the report/export. This process is carried out by the command file BLDCLSEK.CMD.

The CLASS table has been expanded to provide the necessary information for this process, as follows:

projcls	TEXT	2	
catclass	INTEGER		
classnum	INTEGER		
classbrk	INTEGER		
majclass	TEXT	50	
classlook	TEXT	50	
clstitle	TEXT	54	(projcls& classlook)

where classnum is the 4-digit number appearing in the report. The classbrk field defines the break/rollup level for subtotals. Majclass is the class title to be used in the major class breakout report, while clstitle is used for the pop-up menus for selecting a project class, as these title descriptions are different. The table was developed based on the 'calculated data elements table' provided by Dave Harmon. A portion of the revised class table appears below.

Revised Class Table

pr	catc	class	cls	majclass	classlook
NT	114	1145	11	MITIGATION BANKING	-0-
NS	114	1146	11	COASTAL WETLANDS INITIATIVE	-0-
NU	114	1147	11	COASTAL INLET RESEARCH	-0-
				PROGRAM	
NV	114	1148	11	RIVER CONFLUENCE ICE RESEARCH	-0-
NG	120	1200	12	REGULAR LOCKS AND DAMS	MAJOR REHABILITATION OF

				LOCKS AND DAMS	
NL	120	1200	12	NAVIGATION - LOCKS AND DAMS	NAVIGATION - LOCKS AND DAMS
MX	124	1240	12	MAINTENANCE RESEARCH (REMR	-0-
				II)	
FF	210	2100	21	REGULAR RESERVOIRS	MAJOR REHABILITATION OF
					FLOOD CONTROL RESERVOIRS
FR	210	2100	21	REGULAR RESERVOIRS	FLOOD CONTROL - RESERVOIRS
FS	211	2110	21	SCHEDULING FLOOD CONTROL	SCHEDULING FLOOD CONTROL
				RESERVOIRS	RESERVOIRS
RP	213	2130	21	-0-	-0-
FW	214	2140	21	WATER CONTROL RESEARCH	-0-
				PROGRAM	

Note that the majclass and classlook titles are not the same.

The break titles for the report are defined in the CLSBTITL table, defined as follows:

1	classbrk	INTEGER
2	clsbtitl	TEXT 50

classbrk	clsbtitl
-----	
1	-0-
2	-0-
3	-0-
4	-0-
5	-0-
11	NAVIGATION
12	LOCKS AND DAMS
21	RESERVOIRS
22	CHANNEL IMPROVEMENT
30	MULTIPLE PURPOSE
40	PROTECTION OF NAVIGATION
50	NATIONAL EMERGENCY PREPAREDNESS
60	POLICY AND PROCEDURES OPTIONS FOR PROJECT O & M
80	SAVINGS AND SLIPPAGES

#### IMPORTANT:

I was unable to reproduce the sample report provided by Dave Harmon as the major class breakout summary. My attempt at doing this is attached at the end of this document. Problems exist in the correspondence between project class and class number, and in the dollar figures. The CLASS table needs to be revised to reflect the desired correspondence between project class and 4-

digit class number, and the appropriate rollups set. The CLSFTITL table needs to be revised to reflect any changes in the subtotals.

The following is a tally of the project class codes in the WORKFUNC table, and in the PCLS \$ \$ table (representing the history rollup). Note the NULL values, and the discrepancy between these lists and the list in the 'calculated data elements' table, in particular for the historical values.

Tally from WORKFUNC  
Class

Number

FC	495	NA	4
FI	136	NC	1969
FR	9806	ND	3
FS	38	NG	15
GE	184	NL	2121
GI	24	NN	12
GN	32	PA	8
GP	220	PD	6
GS	62	PN	11
MF	4	PR	12
MN	1895	PS	42
MP	4092	-0-	1

Tally from PCLS\_8\_8  
projcls

Number

-0-

4

BC	1
BF	1
BP	1
EX	1
FA	1
FC	14
FE	1
FF	2
FH	1
FI	13
FN	1
FR	13
FS	7
FW	1
FX	1
GE	3
GI	3
GN	3
GP	3
GS	8
MF	3
MH	1
MN	11
MP	9
MA	6
NB	1
NC	16
ND	8
NF	1
NG	3
NL	11
NM	6
NO	1
NR	1
NT	1
NU	1
NV	1
NW	1
NX	1
PA	7
PC	2
PD	7
PG	1
PN	6
PP	1
PR	8
PS	8
PV	2
PW	1
PX	1
RP	1
SS	1

- 2) Check on number of available scenarios (should be 128) fixed
- 3) Place available numbers pick list in cloning functionality  
This is already present. I am not sure what is desired.
- 4) Check on issue of rules on/off for insert of composite scenario, see about method of speeding up this process  
  
The insert process was based on an insert from wfview. I revised the process (see WFTOTEMP.CMD), getting a 20% speed enhancement. Rules are set off.
- 5) check when bit is set in composite scenario generation  
  
In COMPSCN3.C, the bit is set for the composite scenario as it is calculated, while the temporary scenario is being generated. It is re-set when the temporary scenario is stored.
- 6) add default scenario title line in scenario titles table after the scenario is stored  
  
This is done so that we are assured that a scenario title will appear in the Financial Analysis reports, even if the user does not edit the scenario titles table. Done.
- 7) delete temporary tables after they are no longer needed, to minimize number of tables in database  
  
Done. Approximately 60 tables are resident in the database. The generation of Division/FCCD financial reports will create tables for each division (up to 12), so we should be within the 80 table limit.
- 8) add a new field to the workfunc table (other, for cost breakout)  
  
Done.
- 9) look for methods of speeding up the logic checks, and eliminate the checks on the year table  
  
Checks on non-existent tables (year, fundlev) eliminated. Logic check process ran in under 15 minutes, so no additional speed-up was attempted. NOTE THAT LOGICAL CHECKING PROBLEMS WERE REVEALED.
- 10) examine the system (forms/reports) for use of the nint function, and replace this with the proper form for

determining the fccd prefix.

Modification made in reports fcprxprn, dfprxprn, fccdprn, used in the financial analysis reports on FCCD, FCCD prefix, and Divison FCCD prefix. Quick check looks ok, needs closer look.

11) Best/Sum

The work function scoring is locked into Best mode, with no menu appearing to select Best or Sum. The Sum functionality is still retained, but is not currently accessible.

12) Modifications to Composite Scenario Usage

Due to confusion between the types of composite scenarios, the terminology has been revised. A 'U' scenario (union scenario) will provide the union of work functions specified, i.e. any work function in any U scenario is in the composite. An I (intersect) scenario gives the intersection of the I work functions, i.e. the workfunction must be present in all I work functions to be included in the composite. The 'S' scenario subtracts work functions in the S scenarios from the work functions in the I scenarios. The S scenario cannot be combined with the U scenarios, only with the I scenarios, and I and U are also mutually exclusive. When S and I are processed jointly, the I scenarios are processed first, and then the S scenarios are subtracted.

THIS HAS NOT BEEN TESTED EXTENSIVELY, and needs careful examination.

FY 1994  
Project Class Cost Summary Report  
Operations and Maintenance, General Appropriation  
07/04/92 11:45:38

	BUDGET92	BUDGET93	EXPEND91
EC CONTINUITY OF GOVERNMENT PREPAREDNESS	0	0	2,474
EF NATIONAL EMERGENCY FACILITIES	0	0	2
EP MOBILIZATION PREPAREDNESS	0	0	3,494
EX	0	0	0
FA	0	200	0
FC FLOOD CONTROL - CHANNELS	11,083	13,580	16,369
FE	0	4,000	0
FF MAJOR REHABILITATION OF FLOOD CONTROL RESERVOIR	380	0	2,236
FN COST SHARED RECR. DEVEL. - FLOOD CONTROL RESER	0	0	60
FI INSPECTION OF NON-FEDERAL LEVEES	7,816	7,335	7,625
FH INSPECTION OF NON-FEDERAL LEVEES	0	0	1
FR FLOOD CONTROL - RESERVOIRS	255,469	256,569	247,153
FS SCHEDULING FLOOD CONTROL RESERVOIRS	2,852	3,150	3,267
FV	0	675	0
FX	0	3,931	0
NF MAJOR REHAB. AT MULTIPLE PURPOSE PROJECTS	6,469	11,974	971
NN COST SHARED RECR. DEVEL. - MULTI-PURPOSE PROJ	0	0	12,768
MM MULTIPLE PURPOSE - NAVIGATION	135,412	136,875	138,179
NP MULTIPLE PURPOSE - NON NAVIGATION	227,223	227,380	203,496
NB	0	600	0
NC NAVIGATION - CHANNELS AND HARBORS	510,795	529,428	496,824
ND NAVIGATION - Diked DISPOSAL	356	2,061	592
NF MAJOR REHABILITATION OF CHANNELS AND HARBORS	0	0	4,464
NG MAJOR REHABILITATION OF LOCKS AND DAMS	5,863	4,171	7,065
NL NAVIGATION - LOCKS AND DAMS	299,625	287,832	283,592
NM NAVIGATION - MITIGATION OF SHORE DAMAGE	1,153	708	744
NO	0	2,000	0
NR	0	4,000	0
NT	0	1,000	0
NU	0	3,500	0
NV	0	650	0
NW	0	8,836	0
NX	0	4,000	0
PA REMOVAL OF AQUATIC GROWTH	4,453	4,397	4,681
PC PROTECT, CLEAR AND STRAIGHTEN CHANNEL (SEC. 3)	0	50	56
PD PREVENTION OF OBSTRUCTIVE DEPOSITS	1,332	1,222	1,474
PG GENERAL REGULATORY FUNCTIONS	0	0	0
PH SURVEY OF NORTH CENTRAL LAKES	0	3,337	2,330
PP	0	8,000	0
PR DRIFT REMOVAL	7,199	7,713	6,926
PS PROJECT CONDITION SURVEYS	8,958	10,252	8,856
PV REMOVAL OF SUNKEN VESSELS	0	1,000	918
PW WATERBORNE COMMERCE STATISTICS	0	4,079	0
PX	0	100	0
RP	0	1,000	0
SS	0	0	0
	75,127	0	0
	1,561,548	1,557,005	1,448,630

FY 1994  
Major Class Breakout Report  
Operations and Maintenance, General Appropriation  
07/04/92 11:45:40

Class Title	BUDGET92	BUDGET93	EXPEND91
-----			
111 NAVIGATION - CHANNELS AND HARBORS	510,793	529,428	496,824
112 NAVIGATION - DIKED DISPOSAL	356	2,061	592
114 MAJOR REHABILITATION OF CHANNELS AND HARBOR	0	0	4,464
SUBTOTAL	511,149	531,489	501,880
213 COST SHARED RECR. DEVEL. - FLOOD CONTROL RE	0	0	60
222 INSPECTION OF NON-FEDERAL LEVEES	0	0	1
SUBTOTAL	0	0	62
320 COST SHARED RECR. DEVEL. - MULTI-PURPOSE PR	0	0	12,768
SUBTOTAL	0	0	12,768
440 GENERAL REGULATORY FUNCTIONS	0	0	0
SUBTOTAL	0	0	0
510 MOBILIZATION PREPAREDNESS	0	0	3,494
520 CONTINUITY OF GOVERNMENT PREPAREDNESS	0	0	2,474
540 NATIONAL EMERGENCY FACILITIES	0	0	2
SUBTOTAL	0	0	5,972
1110 NAVIGATION - MITIGATION OF SHORE DAMAGE	1,153	708	744
1140 MONITORING OF COMPLETED COASTAL PROJECTS	0	2,000	0
1141 DREDGING RESEARCH PROGRAM	0	4,000	0
1142 REMOVAL OF AQUATIC GROWTH	0	8,036	0
1143 BEACH DISPOSAL (SECTION 933)	0	600	0
1145 MITIGATION BANKING	0	1,000	0
1147 COASTAL INLET RESEARCH PROGRAM	0	3,500	0
1148 RIVER CONFLUENCE ICE RESEARCH	0	650	0
SUBTOTAL NAVIGATION	1,153	20,494	744
1200 REGULAR LOCKS AND DAMS	305,468	292,003	290,657
1240 MAINTENANCE RESEARCH (RENR II)	0	6,000	0
SUBTOTAL LOCKS AND DAMS	305,468	298,003	290,657
2100 REGULAR RESERVOIRS	255,849	256,569	249,390
2110 SCHEDULING FLOOD CONTROL RESERVOIRS	2,852	3,150	3,267
2130	0	1,000	0
2140 WATER CONTROL RESEARCH PROGRAM	0	675	0
2150 ENVIRONMENTAL REVIEW GUIDE FOR OPERATIONS (	0	4,000	0
SUBTOTAL RESERVOIRS	258,701	265,394	252,657
2200 REGULAR CHANNEL IMPROVEMENT	11,083	13,580	16,369
2210 INSPECTION OF COMPLETED WORKS	7,816	7,335	7,625
SUBTOTAL CHANNEL IMPROVEMENT	18,899	20,915	23,994
3000 MULTIPLE PURPOSE	369,104	376,229	334,647
SUBTOTAL MULTIPLE PURPOSE	369,104	376,229	334,647
4100 REMOVAL OF SUNKEN VESSELS	0	1,000	918
4200 PROTECT, CLEAR AND STRAIGHTEN CHANNEL (SEC.	0	50	56
4300 PREVENTION OF OBSTRUCTIVE DEPOSITS	1,332	1,222	1,474
4500 DRIFT REMOVAL	7,199	7,713	6,926
4600	4,453	4,397	4,681
4700 PROJECT CONDITION SURVEYS	8,958	10,252	8,856
4800 SURVEY OF NORTH CENTRAL LAKES	0	3,537	2,330
4900 WATERBORNE COMMERCE STATISTICS	0	4,079	0

SUBTOTAL PROTECTION OF NAVIGATION	21,943	32,250	25,262
5000	0	0,000	0
SUBTOTAL NATIONAL EMERGENCY PREPAREDNESS	0	0,000	0
4000	0	100	0
SUBTOTAL POLICY AND PROCEDURES OPTIONS FOR PROJE	0	100	0
3000	0	0	0
SUBTOTAL SAVINGS AND SLIPPAGES	0	0	0
Grand Totals:	1,561,548	1,557,005	1,448,630

Corps O&M Budget Decision Support System  
Fourth Meeting 14 October 1992 0800  
Water Resources Support Center  
Casey Building  
Fort Belvoir, VA 22060

AGENDA

- I. Review of COMBDSS Version 2 During Budget Analysis
  - A. Download
  - B. Data Checking
  - C. Development of Scenarios
  - D. Calculation of Scenarios
  - E. Reporting
  - F. Ranking Approach
  - G. Ad Hoc Use of System
  - H. Two Databases
  - I. Move to R:Base Version 4
- II. Status of the COMB\_DSS Prototype Version 2.0
  - A. Capabilities
    - 1. 256 scenarios in bit-map file
    - 2. Expanded Reports
  - B. Improvements Needed for FY 95
    - 1. Scenario management
    - 2. Reports
    - 3. Graphical Display of Data
- III. Review of COMBDSS final draft report
- IV. FY 93 Work
  - A. Maintenance of COMB\_DSS at HQUSACE
  - B. Division COMB\_DSS
  - C. Development of Other Decision Support Tools
- V. Action Items
- VI. Next Meeting

## MEMORANDUM FOR RECORD

SUBJECT: Fourth Meeting of COMB\_DSS Project Team

1. The fourth meeting of the COMB\_DSS project team was held at the Institute for Water Resources on 14 October 1992. The primary purposes of the meeting was to review the results of using the COMB\_DSS prototype during the FY 94 budget process, discuss the final report for the work effort and plan for FY 93 work, especially the development of the Division COMB\_DSS. Attending were: Dave Harmon, CECW-OM, Ed Japel, CECER-FS, Connie Raaymakers, CECER-FS, Steve Scott, CECWES-HE-E, Michael R. Walsh, CEWRC-IWR; Richard Males, RMM Technical Services, Inc.; and Craig Strus, Planning and Management Consultants Limited. The agenda for the meeting is attached.
2. The project team discussed the use of the COMB\_DSS during the budget cycle. Dave Harmon provided his perspective as the primary user of the COMB\_DSS and Dick Males and I provided our perspectives as the primary 'fixers' of the system. The prototype was judged to be a success. Dave said that he could not have done the FY 94 analysis using the tools he had available last year. There were problems during the process, such as the database becoming corrupted, but nothing that stopped the analysis. Dick and I noted that there was a lot of 'pressure programming' during July and August, but the basic design of the COMB\_DSS was kept intact. I noted that the COMB\_DSS was not used directly by the decision makers. Dave was the primary user and he responded to the needs of John Perez, John Elmore and others. He suggested that we talk to the decision makers to discover what they thought about the system and whether they would be interested in more hands on work with a DSS.
3. I sent out copies of the initial draft report for everyone to review. No major comments were made by the project team at the meeting. I asked for all comments to be sent to me by 23 October 1992. I will consolidate the comments and give them to Craig Strus so that the final draft report can be ready by 30 October 1992. I will send the final draft to Steve Scott for publishing at WES.
4. The work for FY 93 breaks out into three areas. The first is the development of a Division COMB\_DSS, that is a system with similar capabilities as the Headquarters COMB\_DSS for Divisions to use in the evaluation of budget submittals. Steve Scott and Connie Raaymakers will take the lead on this work effort. They will develop a work plan for comment by other members of the project team. I will help develop the scope of work for contract support by PMCL. This effort will require the full amount of the current funding allocation for the decision support system work unit under the IOMT.
5. The second area of work involves maintenance and updates to the current

COMB\_DSS. The project team decided that this effort should be undertaken directly for HQUSACE rather than under the aegis of the IOMT. I will prepare a proposal to CECW-OM for the conduct of this work for FY 93. Primarily this work will involve making some changes to the COMB\_DSS that were identified during the FY 94 budget process and providing Dave with additional support.

6. The third area of work is the development of other decision support tools for O&M decision makers. The major O&M review study identified several program management issues that should be addressed by CECW-OM. I will review these recommendations and prepare a proposal to develop decision support tools under the IOMT that help address some of the issues. The project team discussed a preliminary idea to develop a DSS that would provide analytical capabilities for expenditures just as the COMB\_DSS does for budget data. The budget is only part of the picture and expenditure analysis is needed to complete it. I asked the project team to think about other DSS possibilities and give me their ideas.

9. Action Items. Several items were noted during the meeting that require action by project team members. These action items are listed by individual below:

- |                   |   |   |
|-------------------|---|---|
| All               | • | Provide comments on COMB_DSS draft report to Michael Walsh by 23 Oct 1992 |
| Michael Walsh     | • | develop scope of work for contract support for Division Budget DSS        |
|                   | • | develop proposal for maintenance of COMB_DSS                              |
|                   | • | develop proposal for new DSS development under IOMT                       |
|                   | • | send final draft report to Steve Scott by 4 November 1992                 |
| Steve Scott       | • | develop work plan for Division Budget DSS with Connie Raasmakers          |
|                   | • | publish final COMB_DSS report   |
| Craig Strus       | • | provide final draft report to Michael Walsh by 30 Oct 1992                |
| Connie Raasmakers | • | develop work plan for Division Budget DSS with Steve Scott                |

Michael R. Walsh  
Civil Engineer

# **Appendix D**

## **Tables in Database**

---

**Table: distcode**  
**Read Password: No**  
**Modify Password: No**

**Table Description: district code lookup**

**Column definitions**

#	Name	Type	Index Expression
1	distcode	TEXT 1	
2	divnam	TEXT 3	
3	distlook	TEXT 5	(distcode& divnam)

**Current number of rows: 12**

---

**Table: cwisscen**  
**Read Password: No**  
**Modify Password: No**

**Table Description: cwis scenario inclusion/exclusion table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	in_outcwis	TEXT 1	
3	cwis	INTEGER	

**Current number of rows: 3**

---

**Table: fccdsce**  
**Read Password: No**  
**Modify Password: No**

**Table Description: fccd scenario inclusion/exclusion table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	in_outfc	TEXT 1	
3	fccd	TEXT 5	

**Current number of rows: 378**

**Table: compacen**  
**Read Password: No**  
**Modify Password: No**

**Table Description: composite scenario definition table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	add_sub_scenario	TEXT 1	
3	scenpart	TEXT 8	

**Current number of rows: 299**

---

**Table: sqlscenario**  
**Read Password: No**  
**Modify Password: No**

**Table Description: direct sql scenario definition**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	sql_text	NOTE	

**Current number of rows: 0**

---

**Table: div\_s\_\$**  
**Read Password: No**  
**Modify Password: No**

**Table Description: div scenario dollars breakout**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	appcode	TEXT 1	
3	divnam	TEXT 3	*
4	dollars	CURRENCY	

**Current number of rows: 1054**

**Table: pcls\_s\_\$**

**Read Password: No**

**Modify Password: No**

**Table Description: project class scenario dollars**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	appcode	TEXT 1	
3	projcls	TEXT 2	*
4	dollars	CURRENCY	

**Current number of rows: 2120**

---

**Table: divscen**

**Read Password: No**

**Modify Password: No**

**Table Description: division scenario inclusion/exclusion table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	divnam	TEXT 3	

**Current number of rows: 189**

---

**Table: classcen**

**Read Password: No**

**Modify Password: No**

**Table Description: projcls scenario inclusion/exclusion table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	projcls	TEXT 2	

**Current number of rows: 7**

**Table: status**

**Read Password: No**

**Modify Password: No**

**Table Description: scenario storage status table**

**Column definitions**

#	Name	Type	Index Expression
1	usage	TEXT 8	
2	scenname	TEXT 8	
3	stordate	DATE	
4	stortime	TIME	

**Current number of rows: 3**

---

**Table: primscen**

**Read Password: No**

**Modify Password: No**

**Table Description: master scenario table**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	scenappcode	TEXT 1	
3	scenminoce	INTEGER	
4	scenmaxoce	INTEGER	
5	scenmincost	CURRENCY	
6	scencumcost	CURRENCY	
7	scenminmeasure	INTEGER	
8	scenmaxmeasure	INTEGER	
9	scenlunp	TEXT 1	
10	scensort	TEXT 1	
11	scmnusr1	INTEGER	
12	scmxusr1	INTEGER	
13	scmnusr2	INTEGER	
14	scmxusr2	INTEGER	

**Current number of rows: 189**

Table: wf\_value  
Read Password: No  
Modify Password: No

Table Description: holds scores, new ranking for wf numbers

Column definitions

#	Name	Type	Index Expression
1	wf_num	INTEGER	*
2	wf_value	INTEGER	

Current number of rows: 19665

Table: scendesc  
Read Password: No  
Modify Password: No

Table Description: scenario description table

Column definitions

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	scentype	TEXT 1	
3	scendesc	TEXT 60	
4	scennotes	NOTE	
5	scenworkfunctions	INTEGER	
6	scentotcost	CURRENCY	
7	scminoce	INTEGER	
8	scmaxoce	INTEGER	
9	scennum	INTEGER	
10	scenstor	INTEGER	
11	sstordat	DATE	
12	sstortim	TIME	
13	scenacor	INTEGER	

Current number of rows: 256

Table: tempname  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	scename	TEXT 8	

Current number of rows: 4

---

Table: district  
Read Password: No  
Modify Password: No

**Table Description: district code information**

**Column definitions**

#	Name	Type	Index Expression
1	district	TEXT 3	*
2	dstnam	TEXT 3	
3	eroc	TEXT 2	
4	progtyp	TEXT 3	
5	divnam	TEXT 3	
6	distitle	TEXT 22	
7	divtitle	TEXT 35	

Current number of rows: 92

---

Table: project  
Read Password: No  
Modify Password: No

**Table Description: project (cwis) related info (download)**

**Column definitions**

#	Name	Type	Index Expression
1	district	TEXT 3	*
2	cwis	INTEGER	*
3	projcls	TEXT 2	*
4	projnam	TEXT 48	

5	state	TEXT 2
6	feecode	TEXT 1
7	tenyrave	DOUBLE
8	surveys	INTEGER
9	lowuse	TEXT 1
10	tonnage	DOUBLE
11	interest	TEXT 1
12	politician	TEXT 40
13	authproj	TEXT 63
14	authcwis	INTEGER

Current number of rows: 2287

---

Table: catfeat

Read Password: No

Modify Password: No

Table Description: category food correspondence (download)

Column definitions

#	Name	Type	Index Expression
1	category	TEXT 3	
2	food	TEXT 5	

Current number of rows: 127

---

Table: cat\_tit

Read Password: No

Modify Password: No

Table Description: category titles (download)

Column definitions

#	Name	Type	Index Expression
1	category	TEXT 3	
2	cat_tit	TEXT 77	
3	descrip_req	TEXT 1	
4	argum_req	TEXT 1	
5	output_tit	TEXT 35	

Current number of rows: 94

**Table: ocescen**  
**Read Password: No**  
**Modify Password: No**

**Table Description:** oce rank includes/excludes on scenario

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	in_outoce	TEXT 1	
3	ocerank	INTEGER	

**Current number of rows:** 12

---

**Table: wf\_num**  
**Read Password: No**  
**Modify Password: No**

**Table Description:** work function numbers

**Column definitions**

#	Name	Type	Index Expression
1	wf_num	INTEGER	*

**Current number of rows:** 2333

---

**Table: tempscen**  
**Read Password: No**  
**Modify Password: No**

**Table Description:** table to hold current scenario wf info

**Column definitions**

#	Name	Type	Index Expression
1	district	TEXT 3	
2	cwis	INTEGER	
3	funcid	INTEGER	
4	ocerank	INTEGER	
5	divnam	TEXT 3	*
6	divrank	INTEGER	
7	projcls	TEXT 2	*
8	fcod	TEXT 5	*
9	totcost	CURRENCY	

10	cumcost	CURRENCY	
11	wf_sum	INTEGER	*
12	appcode	TEXT 1	

Current number of rows: 2333

Table: fccdprti  
Read Password: No  
Modify Password: No

Table Description: feature cost code prefix titles

Column definitions

#	Name	Type	Index Expression
1	fccdprfx	INTEGER	
2	fccdptit	TEXT 50	
3	fccdbrk	INTEGER	

Current number of rows: 35

Table: brktitle  
Read Password: No  
Modify Password: No

Table Description:

Column definitions

#	Name	Type	Index Expression
1	fccdbrk	INTEGER	
2	BRKTITLE	TEXT 30	

Current number of rows: 6

Table: fccdxth  
Read Password: No  
Modify Password: No

Table Description: Column definitions

#	Name	Type	Index Expression
1	rlab	TEXT 18	
2	1	TEXT 1	

3	c1	CURRENCY
4	c2	CURRENCY
5	c3	CURRENCY
6	c4	CURRENCY
7	c5	CURRENCY
8	ctot	CURRENCY

Current number of rows: 127

Table: fcpixtb  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	

Current number of rows: 32

Table: divxpm  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

Current number of rows: 12

**Table: pcisxprn**  
**Read Password: No**  
**Modify Password: No**

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

**Current number of rows: 38**

---

**Table: fcprxprn**  
**Read Password: No**  
**Modify Password: No**

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

**Current number of rows: 28**

**Table: fcdxprn**  
**Read Password: No**  
**Modify Password: No**

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

**Current number of rows: 56**

---

**Table: dfprxprn**  
**Read Password: No**  
**Modify Password: No**

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

**Current number of rows: 24**

Table: workfunc  
Read Password: No  
Modify Password: No

Table Description: Work Function data for FY92

Column definitions

#	Name	Type	Index Expression
1	district	TEXT 3	
2	appcode	TEXT 1	
3	wf_num	INTEGER	*
4	cwis	INTEGER	
5	projcls	TEXT 2	
6	divnam	TEXT 3	
7	year	TEXT 2	
8	funcid	INTEGER	
9	rank	INTEGER	
10	cofmarid	INTEGER	
11	orgcode	TEXT 4	
12	dstrank	INTEGER	
13	divrank	INTEGER	
14	ocerank	INTEGER	*
15	fundlev	TEXT 1	
16	category	TEXT 3	
17	fcd	TEXT 5	
18	totcost	CURRENCY	
19	contracts	CURRENCY	
20	dirlabor	CURRENCY	
21	other	CURRENCY	
22	contrd	CURRENCY	
23	corpsd	CURRENCY	
24	contra	CURRENCY	
25	corpssa	CURRENCY	
26	totdreg	CURRENCY	
27	typdreg	TEXT 2	
28	inspected	TEXT 7	
29	descrip	TEXT 56	
30	argum1	TEXT 64	
31	argum2	TEXT 64	
32	contcontr	CURRENCY	
33	constraint	TEXT 1	
34	output_measure	INTEGER	
35	biddate	INTEGER	
36	advdate	INTEGER	
37	lowuse	TEXT 1	
38	newrank	INTEGER	
39	user1	INTEGER	

40 user2 INTEGER  
41 level INTEGER

Current number of rows: 20699

Table: holdfunc  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	district	TEXT 3	
2	appcode	TEXT 1	
3	wf_num	INTEGER	
4	cwis	INTEGER	
5	projcls	TEXT 2	
6	divnam	TEXT 3	
7	year	TEXT 2	
8	funcid	INTEGER	
9	rank	INTEGER	
10	cofmarid	INTEGER	
11	orgcode	TEXT 4	
12	dstrank	INTEGER	
13	divrank	INTEGER	
14	occrank	INTEGER	
15	fundlev	TEXT 1	
16	category	TEXT 3	
17	fcod	TEXT 5	
18	totcost	CURRENCY	
19	contracts	CURRENCY	
20	dirlabor	CURRENCY	
21	other	CURRENCY	
22	contred	CURRENCY	
23	corpsed	CURRENCY	
24	contra	CURRENCY	
25	corpsa	CURRENCY	
26	totdreg	CURRENCY	
27	typdreg	TEXT 2	
28	inspectcd	TEXT 7	
29	descrip	TEXT 56	
30	argum1	TEXT 64	
31	argum2	TEXT 64	
32	contcontr	CURRENCY	

33	constraint	TEXT 1
34	output_measure	INTEGER
35	biddate	INTEGER
36	advdate	INTEGER
37	lowuse	TEXT 1
38	newrank	INTEGER
39	user1	INTEGER
40	user2	INTEGER
41	level	INTEGER

Current number of rows: 519

Table: class  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	projcls	TEXT 2	
2	catclass	INTEGER	
3	classnum	INTEGER	
4	classbrk	INTEGER	
5	majclass	TEXT 50	
6	classlook	TEXT 50	
7	clsitle	TEXT 54	(projcls& classlook)

Current number of rows: 58

Table: clsbtitl  
Read Password: No  
Modify Password: No

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	classbrk	INTEGER	
2	clsbtitl	TEXT 50	

Current number of rows: 10

**Table: clsttitl**  
**Read Password: No**  
**Modify Password: No**

**Table Description:**

**Column definitions**

#	Name	Type	Index Expression
1	classbrk	INTEGER	
2	clsttitl	TEXT 50	

**Current number of rows: 10**

---

**Table: majclstbk**  
**Read Password: No**  
**Modify Password: No**

**Table Description: major class breakout report driving table**

**Column definitions**

#	Name	Type	Index Expression
1	classnum	INTEGER	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	
7	a6	CURRENCY	
8	a7	CURRENCY	

**Current number of rows: 32**

---

**Table: dum1**  
**Read Password: No**  
**Modify Password: No**

**Column definitions**

#	Name	Type	Index Expression
1	dum1	TEXT 4	

**Current number of rows: 0**

**Table: feat\_tit**  
**Read Password: No**  
**Modify Password: No**

**Table Description: fccd titles (download)**

**Column definitions**

#	Name	Type	Index Expression
1	fcod	TEXT 5	*
2	feat_tit	TEXT 56	
3	fcodtit	TEXT 63	(fcod& feat_tit)

**Current number of rows: 130**

---

**Table: fcod\_s\_\$**  
**Read Password: No**  
**Modify Password: No**

**Table Description: fcod scenario dollars**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	appcode	TEXT 1	
3	fcod	TEXT 5	*
4	dollars	CURRENCY	
5	fcodprefix	INTEGER	((aint(float(fcod))))

**Current number of rows: 5850**

---

**Table: fcodddiv\_s\_\$**  
**Read Password: No**  
**Modify Password: No**

**Table Description: fcod division name rollup**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	*
2	appcode	TEXT 1	
3	divnam	TEXT 3	*
4	fcod	TEXT 5	*
5	dollars	CURRENCY	

6 fcdprefix INTEGER ((aint(float(fcd))))

Current number of rows: 25462

---

Table: alphac

Read Password: No

Modify Password: No

Table Description:

Column definitions

#	Name	Type	Index Expression
1	position	TEXT 4	
2	scenario	TEXT 8	
3	colord	TEXT 2	

Current number of rows: 7

---

Table: divxpr2

Read Password: No

Modify Password: No

Table Description:

Column definitions

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a4	CURRENCY	
3	a1	CURRENCY	
4	a2	CURRENCY	
5	a3	CURRENCY	
6	a6	CURRENCY	
7	a7	CURRENCY	
8	a5	CURRENCY	

Current number of rows: 12

Table: tempfunc  
 Read Password: No  
 Modify Password: No

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	district	TEXT 3	
2	aprcode	TEXT 1	
3	wf_num	INTEGER	Autonumbering
4	cwis	INTEGER	
5	projls	TEXT 2	
6	divnam	TEXT 3	
7	year	TEXT 2	
8	funcid	INTEGER	
9	rank	INTEGER	
10	cofmarid	INTEGER	
11	orgcode	TEXT 4	
12	dstrank	INTEGER	
13	divrank	INTEGER	
14	ocerank	INTEGER	
15	fundlev	TEXT 1	
16	category	TEXT 3	
17	fcod	TEXT 5	
18	totcost	CURRENCY	
19	contracts	CURRENCY	
20	dirlabor	CURRENCY	
21	other	CURRENCY	
22	contred	CURRENCY	
23	corpsed	CURRENCY	
24	contra	CURRENCY	
25	corpsa	CURRENCY	
26	totdreg	CURRENCY	
27	typdreg	TEXT 2	
28	inspected	TEXT 7	
29	descrip	TEXT 56	
30	argum1	TEXT 64	
31	argum2	TEXT 64	
32	contcontr	CURRENCY	
33	constraint	TEXT 1	
34	output_measure	INTEGER	
35	biddate	INTEGER	
36	advdate	INTEGER	
37	lowuse	TEXT 1	
38	newrank	INTEGER	
39	user1	INTEGER	

40 user2 INTEGER  
41 level INTEGER

Current number of rows: 20

---

Table: scentitle  
Read Password: No  
Modify Password: No

Table Description: descriptive titles for scenarios, for reports

Column definitions

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	target_\$	CURRENCY	
3	title1	TEXT 10	
4	title2	TEXT 10	
5	title3	TEXT 10	

Current number of rows: 325

---

Table: environ2  
Read Password: No  
Modify Password: No

Table Definition:

Column definitions

#	Name	Type	Index Expression
1	appcode	TEXT 1	
2	district	TEXT 3	
3	dstnam	TEXT 3	
4	cwis	INTEGER	
5	catclass	INTEGER	
6	projnam	TEXT 48	
7	state	TEXT 2	
8	totcost	CURRENCY	
9	user1	INTEGER	
10	descrip	TEXT 56	

Current number of rows: 1382

Table: environm  
Read Password: No  
Modify Password: No

Table Definition:

Column definitions

#	Name	Type	Index Expression
1	APPCODE	TEXT 1	
2	DISTRICT	TEXT 3	
3	DSTNAM	TEXT 3	
4	CWIS	INTEGER	
5	CATCLASS	INTEGER	
6	PROJNAM	TEXT 48	
7	STATE	TEXT 2	
8	TOTCOST	CURRENCY	
9	USER1	INTEGER	
10	DESCRIP	TEXT 56	

Current number of rows: 21

---

Table: wetlands  
Read Password: No  
Modify Password: No

Table Definition:

Column definitions

#	Name	Type	Index Expression
1	DISTRICT	TEXT 3	
2	DSTNAM	TEXT 3	
3	CWIS	INTEGER	
4	YEAR	TEXT 2	
5	FUNCID	INTEGER	
6	WETCAT	INTEGER	
7	PROJNAM	TEXT 48	
8	USER1	INTEGER	

Current number of rows: 74

**Table: pcixstab**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	
6	a5	CURRENCY	

**Current number of rows: 38**

---

**Table: temp2\$\$\$**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	divnam	TEXT 3	
3	fcod	TEXT 5	
4	listpos	INTEGER	
5	sumdol	CURRENCY	

**Current number of rows: 2763**

**Table: availnum**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	avail	INTEGER	

**Current number of rows: 1**

---

**Table: temp3\$\$\$**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	divnam	TEXT 3	
2	prefix	INTEGER	
3	s1\$	CURRENCY	
4	s2\$	CURRENCY	
5	s3\$	CURRENCY	
6	s4\$	CURRENCY	
7	s5\$	CURRENCY	
8	s6\$	CURRENCY	
9	s7\$	CURRENCY	

**Current number of rows: 234**

Table: listpos  
Read Password: No  
Modify Password: No

Table Definition:

Column definitions

#	Name	Type	Index Expression
1	scenname	TEXT 8	
2	listpos	INTEGER	

Current number of rows: 1

---

Table: temp4\$\$\$  
Read Password: No  
Modify Password: No

Table Definition:

Column definitions

#	Name	Type	Index Expression
1	divnam	TEXT 3	
2	feed	TEXT 5	
3	s1\$	CURRENCY	
4	s2\$	CURRENCY	
5	s3\$	CURRENCY	
6	s4\$	CURRENCY	
7	s5\$	CURRENCY	
8	s6\$	CURRENCY	
9	s7\$	CURRENCY	

Current number of rows: 541

**Table: check1**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	wf_num	INTEGER	

**Current number of rows: 20699**

---

**Table: fcdxtab**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	
4	a3	CURRENCY	
5	a4	CURRENCY	

**Current number of rows: 56**

---

**Table: fcprxtab**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	riab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	

**Current number of rows: 28**

**Table: divxmb**  
**Read Password: No**  
**Modify Password: No**

**Table Definition:**

**Column definitions**

#	Name	Type	Index Expression
1	rnab	TEXT 18	
2	a1	CURRENCY	
3	a2	CURRENCY	

**Current number of rows: 12**

# **Appendix E**

## **Menus/Forms**

---

**Figure C1 - Main Menu**

**Main Menu - CIMSIS Prototype 1.6**

- ☒ **Manage Scenarios Menu**
- (2) **Run Scenarios Menu**
- (3) **Edit/Browse/Move Work Functions**
- (4) **Financial Analysis**
- (5) **Ranking Generator/Evaluator**
- (6) **Utilities**
- (7) **Quit to R:base**

---

**Database: dssabs**

**Figure C2 - Manage Scenarios Menu**

**Manage Scenarios**

- ☒ **Enter/Edit/Clone Primary Scenario**
- (2) **Enter/Edit/Clone Composite Scenario**
- (3) **Enter/Edit/Clone SQL Scenario**
- (4) **Scenario Description Reports Menu**
- (5) **Delete Scenario**
- (6) **Check Scenario Dependencies**
- (7) **Change Scenario Name**
- (8) **Set/Edit Scenario Report Titles**

---

**Database: dssabs**

Figure C3 - Manage Primary Scenarios Form #1

Edit Go to Exit			DTU	CLASS
Name level1	Approp C	Low Use Navigation		
1000000 to	1999999	OCE Ranks		
-0-	to -0-	Output Measure		
-0-	to -0-	User 1		
-0-	to -0-	User 2		
Min Cost -0-	Cumulative Cost -0-	A/D -		
8 Description 1 Level 1 work functions in ODM, General program Notes Level 1 work functions in ODM, General program				

Form: primsdt1 Table: primsccn Field: scenlump Page: 1

Figure C4 - Manage Primary Scenarios Form #2

Edit Go to Exit	CWIS	OCE Ranks	Feature Cost Codes
Scenario level1			

No editable data in this table  
Form: primsdt1 Table: primsccn Field: scenname Page: 1

Figure C5 - Composite Scenario Form

<b>Edit Go to Exit</b>							
<b>Composite Scenario Data Entry/Edit Form</b>							
Scenario Name: LEUICEIL Number: 36 s wf: 7994 tot \$ : \$1,188,524.88							
Description:							
Notes: Level 1 work functions in the ceiling target							
<table border="1"><thead><tr><th>Code</th><th>Scenario Name</th></tr></thead><tbody><tr><td>1</td><td>RECKLING</td></tr><tr><td>1</td><td>level1</td></tr></tbody></table>		Code	Scenario Name	1	RECKLING	1	level1
Code	Scenario Name						
1	RECKLING						
1	level1						
Form: connect1	Table: scenesc						
Field: scenesc	Page: 1						

Figure C6 - SQL Scenario Form

<b>Add/discard Go to Exit</b>	
<b>SQL Scenario Data Entry/Edit Form</b>	
Scenario Name:	Scenario Number:
Description:	
Notes:	
Where Clause:	
Test SQL?	
Form: sqlscen3	Table: scenesc
Field: scenname	Page: 1

Figure C7 - Scenario Report Options

Scenario Report Options  
Database: dssabs

Quick Stored Scenario List  
Available Scenario Numbers  
Scenario Summary Report  
Scenario Summary Row-wise  
Primary Scenarios Report  
Primary Scenario Detail  
Composite Scenarios Report  
SQL Scenarios Report

Figure C8 - Set / Edit Scenario Report Titles

Sort	Edit	Calculate	Layout	Query	Manage views	Print	Edit
scenname	target_\$		title1	title2	title3		
ALLSRP		\$8.00			ALLSRP		
ASACUT1	\$23,615.00		OPER. CUT	PROPOSED	BY ASA(CW)		
BASE94U	\$8.00				BASE94U		
BASE94I	\$8.00				BASE94I		
BASE94	\$8.00				BASE94		
baseline	\$1,589,334.00		FY 1994	Division	Request		
BASEUP	\$8.00				BASEUP		
ELPD9382	\$8.00				ELPD9382		
ELPD9385	\$8.00				ELPD9385		
ELPD9386	\$8.00				ELPD9386		
ELPD9387	\$8.00				ELPD9387		
ELPD9389	\$8.00				ELPD9389		
ELPD9310	\$8.00				ELPD9310		
ELPD9311	\$8.00				ELPD9311		
ELPD9313	\$8.00				ELPD9313		
EPD9382	\$8.00				EPD9382		
EPD9385	\$8.00				EPD9385		
EPD9386	\$8.00				EPD9386		
EPD9310	\$8.00				EPD9310		
EPD9311	\$8.00				EPD9311		

Database: dssabs Table: scentitle Read F4 to Browse Edit

Figure C9 - Run Scenario Menu

**Run Scenarios**

- [F1]** Multi-Scenario Select, Build, Evaluate, Store
- (2) Select Scenario
- (3) Build Temporary Scenario
- (4) Evaluate Temporary Scenario
- (5) Store Temporary Scenario
- (6) Browse Temporary Scenario
- (7) Recall Stored Scenario
- (8) Force Cumulative Cost Calculation for Temporary Scenario
- (9) Check Status

---

Database: dssabs

Figure C10 - Select Scenario Form

Choose Scenarios (esc to return):

ASACU11 c  
BASE94 c  
baseline p  
BASE94 P  
ELW9382 P  
ELW9385 P  
ELW9386 P  
ELW9387 P  
ELW9389 P  
ELW9318 P  
ELW9311 P  
ELW9313 P  
WWD9382 P  
WWD9385 P  
WWD9386 P  
WWD9318 P  
WWD9311 P  
WWD9313 P

Database: dssabs

Figure C11 - Scenario Report Generation Menu

report generation for tempcen

Choose desired reports:

Project Class  
 Fccd Prefix  
 Fccd Full  
 Division & FCCD  
 Project Summary  
 Project FCCD Summary  
 Ranking List - Division, Project  
 Ranking List - OCE Rank Ascending  
 Ranking List - OCE Rank Inverted

Tempcen Reports  
Database: dssabs

Figure C12 - Browse Temporary Scenario Screen

Sort	Edit	Calculate	Layout	Query	Manage views	Print	Exit	
district	cuis	funcid	occrank	divnam	divrank	projcl		
CC2	68	5	1000005	LFD	10003	NC		
CC4	1740	195	1000010	LFD	10006	FP		
CC4	12100	350	1000015	LFD	10009	FP		
CC4	36011	10	1000020	LFD	10012	FP		
CC4	1740	120	1000025	LFD	10015	FP		
CC2	68	10	1000030	LFD	10018	NC		
CC1	0040	105	1000035	MRD	10003	FP		
CC1	0040	115	1000040	MRD	10006	FP		
CC1	0040	120	1000045	MRD	10009	FP		
CC1	0040	125	1000050	MRD	10012	FP		
CC1	0040	305	1000055	MRD	10015	FP		
CC1	0040	130	1000060	MRD	10018	FP		
CC1	0040	265	1000065	MRD	10021	FP		
CC1	0040	135	1000070	MRD	10024	FP		
CC2	12960	30	1000075	MRD	10027	FP		
CC2	12960	35	1000080	MRD	10030	FP		
CC2	12960	150	1000085	MRD	10033	FP		
CC2	12960	40	1000090	MRD	10036	FP		
CC2	12960	45	1000095	MRD	10039	FP		
CC2	12960	10	1000100	MRD	10042	FP		

Database: dssabs Table: tempcen Read F4 to Edit Browse

**Figure C13 - Edit / Browse / Move Work Functions Menu**

**Edit/Browse/Move Work Functions**

- ☒ Edit Work Function Data
- (2) Edit Work Functions Based On Stored Scenario
- (3) Edit Work Functions Based On Temporary Scenario
- (4) Move Work Functions To Hold Table (By Appropriation)
- (5) Move Work Functions From Hold Table (By Appropriation)
- (6) Tally Work Functions (By Appropriation)

Database: dssabs

**Figure C14 - Set OCE Rank Range Form**

Start Range: 0  
End Range: 9999999  
Set OCE Rank Ranges, F2 to exit, esc to quit

Figure C15 - Work Function Entry Form

Edit Go to Exit  
 OM93 Data Entry/Edit Form

Dst	Div	Cls	WF_Num	OWIS	Yr	Rank	DstRank	DivRank	OCERank	Lu
LHD	NC	4		7440	94	2	20212	20150	2002935	2

cofmarid: 20020      orgcode: NAU      category: E85 PCCD: 07.12 Funcid: 20

\$: totcost: \$5.00      lowuse: -      inspectd: -0-  
 contracts: \$0.00      typedreg: -0      constraint:  
 dirlabor: \$0.00  
 contred: \$0.00      output measure: 0  
 corpsed: \$0.00      user1: 10  
 contraa: \$0.00      user2: -0-  
 corpssa: \$0.00  
 totldreg: \$0.00      Bid: 0      Adv: 0  
 contcontr: \$0.00      NewRank: 2900163      Level: -0-

Description: OTHER CONDITION & OPERATION STUDIES  
 Argument1: TO PROVIDE WATER ANALYSIS - ELUTRIATE TEST - FISH SAMPLING TEST  
 Argument2: TO COMPLY WITH STATE ENVIRONMENTAL REGULATIONS PER SEC 404.

Form: fullomb      Table: workfunc      Field: district      Page: 1

Figure C16 - Appropriations Menu

C GEN Operations and Maintenance, General Appropriation  
 E MFT Mississippi River and Tributaries  
 F GNG Regulatory Programs

Appropriation Options  
 Database: dssabs

Figure C17 - Financial Analysis Menu

**Financial Analysis Options**

- ☒ (1) Select Appropriation Code
- (2) Select Scenarios
- (3) Show Currently Selected Scenarios
- (4) Scenario Reports/Export For Selected Scenarios
- (5) Edit Targets/Titles
- (6) Re-Generate Selected Scenario Reports
- (7) Generate summary tables for division scenario reports
- (8) Browse Division FCCD tables
- (9) Division FCCD scenario reports

---

Database: dssabs

Figure C18 - Scenario Report Options

Choose desired reports (esc to return to menu):

Division Name	(Print)
Project Class	(Print)
Fccd Prefix	(Print)
Fccd Full	(Print)
Major Class Breakout	(Print)
Division Name	(Export)
Project Class	(Export)
Fccd Prefix	(Export)
Fccd Full	(Export)
Major Class Breakout	(Export)

Scenario Comparison Reports  
Database: dssabs

Figure C19 - Browse Division FCCD Tables

Sort	Edit	Calculate	Layout	Query	Manage views	Print	Exit
scenname	target_\$		title1	title2	title3		
ALLSRUF	\$0.00				ALLSRUF		
ASACUT1	\$23,615.00		OPER. CUT	PROPOSED	BY ASA(CW)		
BANDWU	\$0.00				BANDWU		
BANDWU	\$0.00				BANDWU		
BASE94	\$0.00				BASE94		
baseline	\$1,509,334.00		FY 1994	Division	Request		
BASEOP	\$0.00				BASEOP		
BLMD9302	\$0.00				BLMD9302		
BLMD9305	\$0.00				BLMD9305		
BLMD9306	\$0.00				BLMD9306		
BLMD9307	\$0.00				BLMD9307		
BLMD9309	\$0.00				BLMD9309		
BLMD9310	\$0.00				BLMD9310		
BLMD9311	\$0.00				BLMD9311		
BLMD9313	\$0.00				BLMD9313		
BMRD9302	\$0.00				BMRD9302		
BMRD9305	\$0.00				BMRD9305		
BMRD9306	\$0.00				BMRD9306		
BMRD9310	\$0.00				BMRD9310		
BMRD9311	\$0.00				BMRD9311		

Database: dssabs Table: scentitle Read F4 to Browse Edit

Sort	Edit	Calculate	Layout	Query	Manage views	Print	Exit
divnam	prefix	s1\$		s2\$	s3\$	s4	
LMD	6	\$100.00		\$0.00	\$0.00		
LMD	29	\$1,600.00		\$0.00	\$0.00		
MRD	6	\$650.00		\$0.00	\$0.00		
MRD	29	\$050.00		\$0.00	\$0.00		
NAD	6	\$297.00		\$0.00	\$0.00		
NAD	29	\$3.00		\$0.00	\$0.00		
NCD	6	\$465.00		\$0.00	\$0.00		
NCD	29	\$436.00		\$0.00	\$0.00		
NED	29	\$95.00		\$0.00	\$0.00		
NPD	6	\$96.00		\$0.00	\$0.00		
NPD	29	\$337.00		\$0.00	\$0.00		
ORD	6	\$399.00		\$0.00	\$0.00		
ORD	29	\$2,182.00		\$0.00	\$0.00		
SAD	6	\$303.00		\$0.00	\$0.00		
SAD	29	\$2,197.00		\$0.00	\$0.00		
SPD	29	\$500.00		\$0.00	\$0.00		
SLD	6	\$63.00		\$0.00	\$0.00		
SLD	29	\$6,683.00		\$0.00	\$0.00		

Database: dssabs Table: temp3\$\$\$ F4 to Browse Edit

Figure C21 - Rank Generator / Evaluator Menu

Rank Generator / Evaluator	
<input checked="" type="checkbox"/> (1)	Assign/Edit Scenario Scores By Form
(2)	Assign/Edit Scenario Scores (Browse Format)
(3)	List Scenario Scores
(4)	Generate Work Function Scores
(5)	Evaluate Work Function Scores
(6)	Re-Rank

Database: dssabs

Figure C22 - Scenario Score Entry / Edit Form

Edit Go to Exit		
Scenario Score Entry/Edit Form		
ALLSNF 6	All SNF work functions in FY 1994 database	-8-
ASACUT1 84	Operations Cut Proposed by ASA(CW)	-8-
BASE94 186	Baseline amounts for selected features within each division	-8-
baseline 28	baseline work functions recommended Division Program	-8-
BASE9P 225	All operations feature costs in division baseline request	-8-
HLMD9382 185	Baseline for feature 82 in LMJD up to \$1,248K	-8-
HLMD9385 187	Baseline for feature 85 in LMJD up to \$2,268K	-8-
HLMD9386 188	Baseline for feature 86 in LMJD up to \$11,914K	-8-
HLMD9387 189	Baseline for feature 87 in LMJD up to \$9,188K	-8-
HLMD9389 118	Baseline for feature 89 in LMJD up to \$4,849K	-8-
HLMD9318 111	Baseline for feature 18 in LMJD up to \$1,199K	-8-
HLMD9311 112	Baseline for feature 11 in LMJD up to \$1,326K	-8-
HLMD9313 113	Baseline for feature 13 in LMJD up to \$48K	-8-
MRD9382 115	Baseline for feature 82 in MRD up to \$8,347K	-8-
MRD9385 116	Baseline for feature 85 in MRD up to \$5,447K	-8-
MRD9386 117	Baseline for feature 86 in MRD up to \$14,992K	-8-
MRD9318 118	Baseline for feature 18 in MRD up to \$695K	-8-
MRD9311 119	Baseline for feature 11 in MRD up to \$2,917K	-8-

Form: scenscor Table: scendesc Field: scenscor Page: 1

Figure C23 - Scenario Score Entry / Browse Format

Sort Edit Calculate Layout Query Manage views Print Exit			
scenname	scennum	scendesc	scenscor
ALLSMUF	6	All SMUF work functions in FY 1994 database	-0-
ASACUT1	84	Operations Cut Proposed by ASA(CW)	-0-
BASE94	186	Baseline amounts for selected features within each division	-0-
baseline	28	baseline work functions recommended Division Program	-0-
BASEOP	225	All operations feature costs in division baseline request	-0-
NLM9382	185	Baseline for feature 82 in LMD up to \$4,248K	-0-
NLM9385	187	Baseline for feature 85 in LMD up to \$2,268K	-0-
NLM9386	188	Baseline for feature 86 in LMD up to \$11,914K	-0-
NLM9387	189	Baseline for feature 87 in LMD up to \$9,188K	-0-
NLM9389	118	Baseline for feature 89 in LMD up to \$4,849K	-0-

Database: dssabs Table: scendesc Read F4 to Edit Browse

Figure C24 - Rerank Menu

Generate Rerank File and Run Reranking

Load Results of Rerank to wf\_value

Load Rerank into newrank in workfunc

Evaluate Rerank Range for Multi Scenarios

Evaluate Rerank for Out of Funding Level

Evaluate Rerank for Waiver Moves

Evaluate Ranking for Division Out of Order

Clear newrank in workfunc

Reranking Functions  
Database: dssabs

Figure C25 - Utility Menu

Utilities	
<input type="checkbox"/>	List a File
(2)	Check Database
(3)	Backup Database
(4)	Pack Database
(5)	Re-construct List of Available Scenario Numbers
(6)	Browse Any Table in Database
(7)	Initial Report on Workfunc Table
(8)	Logic Check on Workfunc Table
(9)	Gateway - generic export

Database: dssabs

Figure C26 - Utility Browse any Table Option

Pick a Table to Browse:

Table
cuisscen
fcciscen
compacen
sglscenario
div_s_9
pcls_s_9
divscen
classcen
status
prinscen
uf_value
scendesc
tempname
district
project
catfeat
cat_tit

Choose a table.  
Database: dssabs

district code lookup

# **Appendix F**

## **Sample Reports**

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The following series of reports were generated from the Utilities Menu, option #7, Initial Report on Workfunc Table. These reports were routed to an ASCII disk file and, in some cases, condensed to represent a portion of the original report.

QUERY by Funding level 1 , Approp. Code,  
OCE rank >= 0 and < 9999999

FundLev	Count(FundLev)	AppCode	Sum(TotCost)
1	8075	C	1,182,177.00
1	260	E	\$107,959.00

QUERY by Funding level 1 , Approp. Code, Division,  
OCE rank >= 0 and < 9999999

FundLev	Count(FundLev)	AppCode	DivNam	Sum(TotCost)
1	410	C	LMD	\$136,573.00
1	691	C	MRD	\$69,137.00
1	433	C	NAD	\$91,715.00
1	626	C	NCD	\$133,964.00
1	438	C	NED	\$20,366.00
1	831	C	NPD	\$135,140.00
1	1429	C	ORD	\$162,527.00
1	3	C	POD	\$130.00
1	996	C	SAD	\$169,518.00
1	208	C	SPD	\$42,826.00
1	1994	C	SWD	\$175,171.00
1	16	C	ZZ1	\$45,110.00
1	260	E	MMD	\$107,959.00

QUERY by Funding level 1 , Approp. Code, Project class,  
 OCE rank >= 0 and OCE rank < 9999999

FundLev	Count(FundLev)	AppCode	ProjCls	Sum(TotCost)
1	1 C	FA		\$200.00
1	103 C	FC		\$9,709.00
1	1 C	FE		\$4,000.00
1	46 C	FI		\$3,261.00
1	4174 C	FR		\$213,553.00
1	30 C	FS		\$3,216.00
1	1 C	FX		\$3,931.00
1	708 C	MN		\$106,438.00
1	1395 C	MP		\$182,950.00
1	1 C	NA		\$5.00
1	1 C	NB		\$600.00
1	810 C	NC		\$365,629.00
1	1 C	ND		\$300.00
1	733 C	NL		\$228,668.00
1	1 C	NO		\$2,100.00
1	1 C	NR		\$3,487.00
1	1 C	NT		\$335.00
1	1 C	NU		\$5,000.00
1	1 C	NV		\$1,050.00
1	1 C	NW		\$4,247.00
1	1 C	NX		\$6,000.00
1	2 C	PA		\$1,702.00
1	1 C	PC		\$50.00
1	2 C	PD		\$575.00
1	11 C	PN		\$3,780.00
1	1 C	PP		\$8,000.00
1	7 C	PR		\$7,724.00
1	36 C	PS		\$9,557.00
1	1 C	PV		\$1,000.00
1	1 C	PW		\$4,310.00
1	1 C	RP		\$800.00
1	171 E	FC		\$95,009.00
1	2 E	FI		\$470.00
1	79 E	FR		\$10,399.00
1	8 E	NC		\$2,081.00

QUERY by Funding level 1 , Approp. Code, Division, Project class,  
 OCE rank >= 0 and OCE rank < 9999999

FundLev	Count(FundLev)	AppCode	DivNam	ProjCls	Sum(TotCost)
1	12 C	LMD	FI		\$560.00
1	90 C	LMD	FR		\$9,010.00
1	83 C	LMD	MP		\$11,735.00
1	123 C	LMD	NC		\$95,117.00
1	99 C	LMD	NL		\$18,275.00
1	1 C	LMD	PA		\$1,698.00
1	2 C	LMD	PS		\$178.00
1	3 C	MRD	PC		\$65.00
1	3 C	MRD	FI		\$294.00
1	431 C	MRD	FR		\$21,131.00
1	6 C	MRD	FS		\$698.00
1	216 C	MRD	MP		\$41,277.00
1	32 C	MRD	NC		\$5,672.00
1	6 C	NAD	PC		\$769.00
1	2 C	NAD	FI		\$64.00
1	254 C	NAD	FR		\$15,472.00
1	4 C	NAD	FS		\$128.00
1	151 C	NAD	NC		\$66,030.00
1	2 C	NAD	PD		\$575.00
1	6 C	NAD	PR		\$5,666.00
1	8 C	NAD	PS		\$3,011.00
1	4 C	NCD	PC		\$61.00
1	4 C	NCD	FI		\$258.00
1	223 C	NCD	FR		\$11,176.00
1	41 C	NCD	NN		\$13,604.00
1	191 C	NCD	NC		\$41,560.00
1	1 C	NCD	ND		\$300.00
1	148 C	NCD	NL		\$62,665.00
1	8 C	NCD	PN		\$3,576.00
1	6 C	NCD	PS		\$764.00
1	11 C	NED	PC		\$337.00
1	1 C	NED	FI		\$150.00
1	414 C	NED	FR		\$10,283.00
1	9 C	NED	NC		\$6,131.00
1	1 C	NED	PN		\$16.00
1	2 C	NED	PS		\$3,449.00
1	18 C	NPD	PC		\$1,514.00
1	5 C	NPD	FI		\$303.00
1	217 C	NPD	FR		\$8,385.00
1	8 C	NPD	FS		\$790.00
1	253 C	NPD	NN		\$51,175.00
1	257 C	NPD	MP		\$38,367.00
1	35 C	NPD	NC		\$28,013.00
1	31 C	NPD	NL		\$5,567.00
1	2 C	NPD	PN		\$188.00
1	5 C	NPD	PS		\$838.00
1	12 C	ORD	PC		\$2,084.00
1	4 C	ORD	FI		\$219.00
1	993 C	ORD	FR		\$47,425.00
1	126 C	ORD	NN		\$16,227.00

QUERY by Funding level 1 , Approp. Code, FCCD,  
 OCE rank >= 0 and < 9999999

FundLev	Count(FundLev)	AppCode	FCCD	Sum(TotCost)
1	76	C	01.1	\$110,854.00
1	376	C	01.2	\$42,574.00
1	294	C	01.3	\$20,522.00
1	187	C	02.1	\$7,553.00
1	398	C	02.2	\$40,176.00
1	315	C	02.3	\$19,018.00
1	34	C	03.1	\$2,434.00
1	24	C	03.2	\$1,631.00
1	91	C	04	\$52,071.00
1	276	C	05.1	\$17,720.00
1	14	C	05.2	\$7,083.00
1	29	C	05.3	\$5,438.00
1	73	C	05.4	\$1,871.00
1	11	C	05.5	\$1,549.00
1	354	C	06.1	\$97,669.00
1	1	C	06.2	\$36.00
1	1	C	06.3	\$96.00
1	1	C	06.4	\$31.00
1	248	C	07.11	\$37,251.00
1	131	C	07.12	\$13,250.00
1	2	C	07.13	\$89.00
1	107	C	07.21	\$2,307.00
1	430	C	07.22	\$11,644.00
1	214	C	07.23	\$3,427.00
1	135	C	07.24	\$1,768.00
1	16	C	07.41	\$3,156.00
1	15	C	07.42	\$213.00
1	39	C	07.53	\$4,534.00
1	10	C	07.54	\$2,374.00
1	2	C	07.7	\$270.00
1	650	C	09.1	\$39,162.00
1	443	C	09.2	\$30,516.00
1	287	C	09.3	\$8,450.00
1	44	C	10.11	\$2,588.00
1	3	C	10.22	\$97.00
1	481	C	11	\$12,065.00
1	139	C	13	\$1,201.00
1	2	C	14	\$575.00
1	191	C	16	\$6,384.00
1	96	C	20	\$1,286.00
1	3	C	20.6	\$477.00
1	37	C	20.7	\$673.00
1	5	C	20.8	\$313.00
1	200	C	21.11	\$16,387.00
1	29	C	21.15	\$823.00
1	4	C	21.16	\$203.00
1	81	C	21.2	\$3,978.00
1	84	C	22.1	\$45,422.00
1	8	C	22.5	\$832.00

QUERY by Funding level 1 , Approp. Code, Division, FCCD, OCE rank  
 >= 0 and OCE rank < 9999999

FundLev	Count(FundLev)	AppCode	DivNam	FCCD	Sum(TotCost)
1	12	C	LMD	01.1	\$14,353.00
1	16	C	LMD	01.2	\$3,434.00
1	7	C	LMD	01.3	\$410.00
1	4	C	LMD	02.1	\$136.00
1	20	C	LMD	02.2	\$2,402.00
1	19	C	LMD	02.3	\$1,758.00
1	1	C	LMD	03.1	\$29.00
1	2	C	LMD	03.2	\$360.00
1	4	C	LMD	04	\$1,769.00
1	11	C	LMD	05.1	\$1,570.00
1	10	C	LMD	05.4	\$335.00
1	13	C	LMD	06.1	\$9,316.00
1	37	C	LMD	07.11	\$6,842.00
1	7	C	LMD	07.12	\$407.00
1	4	C	LMD	07.21	\$116.00
1	20	C	LMD	07.22	\$1,189.00
1	8	C	LMD	07.23	\$153.00
1	4	C	LMD	07.24	\$78.00
1	1	C	LMD	07.42	\$7.00
1	2	C	LMD	07.53	\$60.00
1	24	C	LMD	09.1	\$2,691.00
1	12	C	LMD	09.2	\$1,001.00
1	13	C	LMD	09.3	\$793.00
1	12	C	LMD	10.11	\$560.00
1	14	C	LMD	11	\$864.00
1	2	C	LMD	13	\$10.00
1	9	C	LMD	16	\$458.00
1	9	C	LMD	20	\$111.00
1	4	C	LMD	20.7	\$68.00
1	3	C	LMD	21.11	\$117.00
1	1	C	LMD	21.16	\$25.00
1	5	C	LMD	22.1	\$4,215.00
1	8	C	LMD	23.1	\$1,196.00
1	1	C	LMD	23.2	\$20.00
1	3	C	LMD	24.1	\$84.00
1	4	C	LMD	25.1	\$115.00
1	2	C	LMD	27.1	\$109.00
1	6	C	LMD	29.1	\$405.00
1	1	C	LMD	29.11	\$100.00
1	5	C	LMD	29.2	\$470.00
1	3	C	LMD	29.3	\$170.00
1	5	C	LMD	29.4	\$66.00
1	1	C	LMD	30.1	\$19.00
1	6	C	LMD	30.2	\$241.00
1	1	C	LMD	31	\$60.00
1	7	C	LMD	32.1	\$154.00
1	34	C	LMD	33.11	\$71,298.00
1	1	C	LMD	33.21	\$1,698.00
1	11	C	LMD	33.22	\$4,481.00
1	1	C	LMD	33.3	\$250.00

**Total work function count by approp code**

C	19886
E	813

**QUERY by Approp. Code,**  
**OCE rank >= 0 and < 9999999**

AppCode	Count(AppCode)	Sum(TotCost)
C	19886	3,118,935.00
E	813	\$221,299.00

**QUERY by Approp. Code, Division,**  
**OCE rank >= 0 and < 9999999**

AppCode	Count(AppCode)	DivNam	Sum(TotCost)
C	1074	LMD	\$266,814.00
C	1830	MRD	\$142,951.00
C	778	NAD	\$157,436.00
C	1632	NCD	\$856,859.00
C	1095	NED	\$48,892.00
C	2090	NPD	\$322,940.00
C	3576	ORD	\$345,890.00
C	11	POD	\$1,458.00
C	2399	SAD	\$408,696.00
C	394	SPD	\$85,767.00
C	4989	SWD	\$435,347.00
C	18	ZZ1	\$45,885.00
E	813	MMD	\$221,299.00

**QUERY by Approp. Code, Funding level 1**  
**OCE rank >= 0 and < 9999999**

AppCode	Count(AppCode)	FundLev	Sum(TotCost)
C	8075	1	1,182,177.00
E	260	1	\$107,959.00

QUERY by Approp. Code, Division, Funding level 1  
OCE rank >= 0 and < 9999999

AppCode	Count(AppCode)	DivNam	FundLev	Sum(TotCost)
C	410	LMD	1	\$136,573.00
C	691	MRD	1	\$69,137.00
C	433	NAD	1	\$91,715.00
C	626	NCD	1	\$133,964.00
C	438	NED	1	\$20,366.00
C	831	NPD	1	\$135,140.00
C	1429	ORD	1	\$162,527.00
C	3	POD	1	\$130.00
C	996	SAD	1	\$169,518.00
C	208	SPD	1	\$42,826.00
C	1994	SWD	1	\$175,171.00
C	16	ZZ1	1	\$45,110.00
E	260	MMD	1	\$107,959.00

QUERY by Approp. Code, Project class,  
OCE rank >= 0 and < 9999999

AppCode	Count(AppCode)	ProjCls	Sum(TotCost)
C	1	FA	\$200.00
C	163	FC	\$19,658.00
C	1	FE	\$4,000.00
C	127	FI	\$8,630.00
C	9345	FR	\$489,916.00
C	38	FS	\$3,515.00
C	1	FW	\$675.00
C	1	FX	\$3,931.00
C	4	MF	\$16,900.00
C	1898	MN	\$429,753.00
C	4093	MP	\$445,802.00
C	4	NA	\$559.00
C	1	NB	\$600.00
C	1961	NC	\$808,496.00
C	3	ND	\$6,050.00
C	15	NG	\$29,844.00
C	2122	NL	\$781,522.00
C	12	NM	\$1,168.00
C	1	NO	\$2,100.00
C	1	NR	\$3,487.00
C	1	NT	\$335.00
C	1	NU	\$5,000.00
C	1	NV	\$1,050.00
C	1	NW	\$4,247.00
C	1	NX	\$6,000.00
C	8	PA	\$5,192.00
C	1	PC	\$50.00
C	6	PD	\$1,621.00
C	11	PN	\$3,780.00
C	1	PP	\$8,000.00

QUERY by Approp. Code, Division, Project class,  
OCE rank >= 0 and < 9999999

AppCode	Count(AppCode)	DivNam	ProjCls	Sum(TotCost)
C	2	LMD	FC	\$425.00
C	22	LMD	FI	\$1,558.00
C	258	LMD	FR	\$23,562.00
C	298	LMD	MP	\$44,714.00
C	266	LMD	NC	\$144,597.00
C	224	LMD	NL	\$49,982.00
C	2	LMD	PA	\$1,798.00
C	2	LMD	PS	\$178.00
C	4	MRD	FC	\$265.00
C	19	MRD	FI	\$836.00
C	976	MRD	FR	\$42,799.00
C	6	MRD	FS	\$698.00
C	753	MRD	MP	\$89,437.00
C	72	MRD	NC	\$8,916.00
C	8	NAD	FC	\$819.00
C	12	NAD	FI	\$587.00
C	433	NAD	FR	\$23,639.00
C	5	NAD	FS	\$132.00
C	1	NAD	NA	\$45.00
C	295	NAD	NC	\$120,984.00
C	5	NAD	PD	\$1,621.00
C	10	NAD	PR	\$6,598.00
C	8	NAD	PS	\$3,011.00
C	6	NCD	FC	\$1,111.00
C	14	NCD	FI	\$1,002.00
C	453	NCD	FR	\$25,729.00
C	71	NCD	MN	\$194,331.00
C	456	NCD	NC	\$151,093.00
C	3	NCD	ND	\$6,050.00
C	15	NCD	NG	\$29,844.00
C	587	NCD	NL	\$442,170.00
C	12	NCD	NM	\$1,168.00
C	8	NCD	PN	\$3,576.00
C	7	NCD	PS	\$785.00
C	19	NED	FC	\$1,343.00
C	2	NED	FI	\$200.00
C	1048	NED	FR	\$29,834.00
C	20	NED	NC	\$13,322.00
C	1	NED	PN	\$16.00
C	5	NED	PS	\$4,177.00
C	29	NPD	FC	\$2,131.00
C	11	NPD	FI	\$573.00
C	391	NPD	FR	\$18,332.00
C	10	NPD	FS	\$961.00
C	3	NPD	MP	\$6,900.00
C	708	NPD	MN	\$135,220.00
C	700	NPD	MP	\$80,461.00
C	1	NPD	NA	\$382.00
C	152	NPD	NC	\$66,546.00
C	77	NPD	NL	\$10,363.00

QUERY by Approp. Code, FCCD,  
OCE rank >= 0 and < 9999999

AppCode	Count(AppCode)	FCCD	Sum(TotCost)
C	105	01.1	\$118,936.00
C	382	01.2	\$42,757.00
C	314	01.3	\$21,621.00
C	272	02.1	\$8,706.00
C	646	02.2	\$47,227.00
C	535	02.3	\$26,328.00
C	35	03.1	\$2,453.00
C	24	03.2	\$1,631.00
C	127	04	\$52,677.00
C	757	05.1	\$34,707.00
C	15	05.2	\$7,115.00
C	65	05.3	\$12,318.00
C	345	05.4	\$11,961.00
C	17	05.5	\$2,013.00
C	814	06.1	\$126,732.00
C	109	06.2	\$7,215.00
C	41	06.3	\$2,373.00
C	300	06.4	\$7,779.00
C	387	07.11	\$45,169.00
C	269	07.12	\$21,670.00
C	22	07.13	\$1,616.00
C	152	07.21	\$4,448.00
C	615	07.22	\$15,690.00
C	243	07.23	\$4,525.00
C	155	07.24	\$2,151.00
C	67	07.41	\$5,030.00
C	112	07.42	\$1,431.00
C	19	07.52	\$626.00
C	447	07.53	\$23,133.00
C	14	07.54	\$2,582.00
C	2	07.6	\$132.00
C	12	07.7	\$1,871.00
C	800	09.1	\$42,627.00
C	693	09.2	\$38,409.00
C	412	09.3	\$11,549.00
C	110	10.11	\$7,239.00
C	45	10.22	\$246.00
C	1045	11	\$21,799.00
C	2	12.21	\$13.00
C	190	13	\$1,607.00
C	6	14	\$1,621.00
C	295	16	\$8,002.00
C	385	20	\$17,883.00
C	170	20.6	\$8,584.00
C	76	20.7	\$1,110.00
C	266	20.8	\$17,428.00
C	980	21.11	\$276,139.00
C	3	21.13	\$14.00
C	56	21.15	\$3,134.00
C	7	21.16	\$688.00

QUERY by Approp. Code, Division, FCCD,  
OCE rank >= 0 and < 9999999

AppCode	Count(AppCode)	DivNam	FCCD	Sum(TotCost)
C	17	LMD	01.1	\$14,523.00
C	16	LMD	01.2	\$3,434.00
C	7	LMD	01.3	\$410.00
C	10	LMD	02.1	\$337.00
C	35	LMD	02.2	\$2,919.00
C	32	LMD	02.3	\$2,093.00
C	1	LMD	03.1	\$29.00
C	2	LMD	03.2	\$360.00
C	4	LMD	04	\$1,769.00
C	37	LMD	05.1	\$3,209.00
C	30	LMD	05.4	\$1,355.00
C	1	LMD	05.5	\$8.00
C	41	LMD	06.1	\$14,017.00
C	18	LMD	06.2	\$732.00
C	1	LMD	06.3	\$100.00
C	27	LMD	06.4	\$748.00
C	40	LMD	07.11	\$6,903.00
C	19	LMD	07.12	\$772.00
C	7	LMD	07.21	\$201.00
C	24	LMD	07.22	\$1,311.00
C	9	LMD	07.23	\$219.00
C	7	LMD	07.24	\$124.00
C	3	LMD	07.42	\$27.00
C	1	LMD	07.52	\$43.00
C	10	LMD	07.53	\$322.00
C	1	LMD	07.6	\$32.00
C	2	LMD	07.7	\$430.00
C	32	LMD	09.1	\$2,959.00
C	19	LMD	09.2	\$1,324.00
C	25	LMD	09.3	\$1,125.00
C	22	LMD	10.11	\$1,558.00
C	7	LMD	10.22	\$14.00
C	44	LMD	11	\$1,866.00
C	11	LMD	13	\$75.00
C	16	LMD	16	\$578.00
C	24	LMD	20	\$1,225.00
C	15	LMD	20.6	\$106.00
C	7	LMD	20.7	\$142.00
C	24	LMD	20.8	\$1,747.00
C	26	LMD	21.11	\$7,729.00
C	1	LMD	21.13	\$3.00
C	1	LMD	21.15	\$25.00
C	4	LMD	21.16	\$510.00
C	5	LMD	21.2	\$358.00
C	32	LMD	22.1	\$22,080.00
C	1	LMD	22.5	\$145.00
C	9	LMD	23.1	\$1,208.00
C	10	LMD	23.2	\$1,756.00
C	1	LMD	23.6	\$20.00
C	17	LMD	24.1	\$1,518.00

The following pages represent option #8 from the Utilities Menu, Logic Check on Workfunc Table. These reports were routed to an ASCII disk file and, in some cases, condensed to represent a portion of the original report. Note that the logical checks are looking for inconsistencies in the initial mainframe-imported data set. For many of the checks, these inconsistencies are not found.

Logic Checking Report 10/07/92 13:08:21

CHECK WORKFUNC FOR UNIQUE WORK FUNCTION NUMBERS  
-----

WFNUM COUNT  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:08:44

MAXIMUM AND MINIMUM WORK FUNCTION NUMBERS  
-----

Appropriation	Max#	Min#
C	21196	1
E	21218	19883
F	-0-	-0-

13:09:38

CHECK WORKFUNC FOR INVALID DIVISIONS AS REFERENCED IN DISTCODE

WFNUM	DIVNAM
21197	MMD
21198	MMD
21199	MMD
21200	MMD
21201	MMD
21202	MMD
21203	MMD
21204	MMD
21205	MMD
21206	MMD
21207	MMD
21208	MMD
21209	MMD
21210	MMD
21211	MMD
21212	MMD
21213	MMD
21214	MMD
21215	MMD
21216	MMD
21217	MMD
21218	MMD
19883	MMD
19884	MMD
19885	MMD
19886	MMD
19887	MMD
19888	MMD
19889	MMD
19890	MMD
19891	MMD
19892	MMD
19893	MMD
19894	MMD
19895	MMD
19896	MMD
19897	MMD
19898	MMD
19899	MMD
19900	MMD
19901	MMD
19902	MMD
19903	MMD
19904	MMD
19905	MMD
19906	MMD
19907	MMD
19908	MMD

13:10:00

CHECK WORKFUNC FOR INVALID DISTRICTS AS REFERENCED IN DISTRICT

-----  
WFNUM DISTRICT  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:10:30

CHECK WORKFUNC FOR INVALID FCCD AS REFERENCED IN FEAT\_TIT

-----  
WFNUM DISTRICT DIVNAM FCCD  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:11:11

CHECK WORKFUNC FOR INVALID PROJCLS AS REFERENCED IN CLASS

-----  
WFNUM DISTRICT DIVNAM PROJCLS  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:11:37

CHECK WORKFUNC FOR APP\_CODE NOT EQUAL TO "C", "E", OR "F"

-----  
WFNUM DISTRICT DIVNAM APPCODE  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:11:55

CHECK WORKFUNC FOR MISSING COFMARID

-----  
WFNUM DISTRICT DIVNAM COFMARID  
-----

-WARNING- No rows exist or satisfy the specified clause.

13:12:11

CHECK WORKFUNC FOR MISSING CATEGORY

-----  
WFNUM DISTRICT DIVNAM CATEGORY  
-----  
-WARNING- No rows exist or satisfy the specified clause.

13:12:27

CHECK WORKFUNC FOR MISSING CWIS NUMBER

-----  
WFNUM DISTRICT DIVNAM CWIS  
-----  
-WARNING- No rows exist or satisfy the specified clause.

13:12:44

CHECK WORKFUNC FOR MISSING WORK FUNC NUMBER

-----  
WFNUM DISTRICT DIVNAM  
-----  
-WARNING- No rows exist or satisfy the specified clause.

13:12:44

CHECK WORKFUNC FOR MISSING FUNCID

-----  
WFNUM DISTRICT DIVNAM FUNCID  
-----  
-WARNING- No rows exist or satisfy the specified clause.

13:13:01

CHECK WORKFUNC FOR MISSING RANK

-----  
WFNUM DISTRICT DIVNAM RANK  
-----  
-WARNING- No rows exist or satisfy the specified clause.

13:13:17

CHECK WORKFUNC FOR OUTPUT MEASURE RANGE (0-100)

WFNUM	DISTRICT	DIVNAM	OUTPUT MEASURE
19977	EB2	MMD	600
20088	EB3	MMD	588
20089	EB3	MMD	271
20193	EB4	MMD	207
20194	EB4	MMD	237
20325	EB4	MMD	213
20426	EB4	MMD	241
20427	EB4	MMD	252
20444	EB4	MMD	276
20455	EB4	MMD	150
20499	EB4	MMD	137
20602	EB4	MMD	302
20618	EB4	MMD	170
187	CB3	LMD	389
209	CB3	LMD	167
232	CB3	LMD	389
283	CB3	LMD	117
412	CB3	LMD	440
534	CB3	LMD	184
552	CB3	LMD	182
559	CB3	LMD	1270
671	CB3	LMD	184
704	CB3	LMD	139
870	CB4	LMD	287
960	CB4	LMD	1660
1246	CC1	MRD	111
1335	CC1	MRD	195
1589	CC1	MRD	142
2128	CC2	MRD	239
2332	CC2	MRD	380
2339	CC2	MRD	415
2379	CC2	MRD	218
2501	CC2	MRD	378
2525	CC2	MRD	376
2616	CC2	MRD	114
2683	CC2	MRD	120
2721	CC2	MRD	203
2728	CC2	MRD	396
4695	CE5	NAD	115
4724	CE5	NAD	103
5254	CF3	NCD	180
5662	CF4	NCD	150
5945	CF5	NCD	141
6246	CF5	NCD	370
6542	CG2	NPD	135
6926	CG2	NPD	244
7174	CG2	NPD	251
8181	CG4	NPD	109

13:13:34

WARNING - TOTAL COST IS LESS THAN OR EQUAL TO ZERO

WPMUM	DISTRICT	DIVNAM	TOTCOST
1193	CC1	MRD	-\$8.00
1284	CC1	MRD	-\$7.00
1361	CC1	MRD	-\$12.00
1408	CC1	MRD	-\$5.00
1454	CC1	MRD	-\$10.00
1556	CC1	MRD	-\$6.00
1607	CC1	MRD	-\$4.00
1660	CC1	MRD	-\$4.00
1720	CC1	MRD	-\$9.00
1812	CC1	MRD	-\$10.00
1956	CC1	MRD	-\$3.00
13839	CK6	SAD	-\$300.00
14210	CK7	SAD	-\$50.00
14364	CK7	SAD	-\$10.00

13:13:52

WARNING - ZERO OR MISSING DISTRICT RANK IN WORKPUNC TABLE

WFNUM	DISTRICT	DIVNAM	DSTRANK
4441	CE4	NAD	0
4442	CE4	NAD	0
4444	CE4	NAD	0
4456	CE4	NAD	0
4503	CE4	NAD	0
4509	CE4	NAD	0
4510	CE4	NAD	0
4511	CE4	NAD	0
4517	CE4	NAD	0
4518	CE4	NAD	0
4522	CE4	NAD	0
4536	CE4	NAD	0
4553	CE4	NAD	0
4593	CE5	NAD	0
7948	CG4	NPD	0
7949	CG4	NPD	0
8025	CG4	NPD	0
8433	CG4	NPD	0
11381	CH4	ORD	0
16478	CM3	SWD	0
16507	CM3	SWD	0
16509	CM3	SWD	0
16528	CM3	SWD	0
16535	CM3	SWD	0
16545	CM3	SWD	0
16548	CM3	SWD	0
16559	CM3	SWD	0
16566	CM3	SWD	0
19865	CS0	ZZ1	0
19866	CS0	ZZ1	0
19867	CS0	ZZ1	0
19868	CS0	ZZ1	0
19869	CS0	ZZ1	0
19870	CS0	ZZ1	0
19871	CS0	ZZ1	0
19872	CS0	ZZ1	0
19873	CS0	ZZ1	0
19874	CS0	ZZ1	0
19875	CS0	ZZ1	0
19876	CS0	ZZ1	0
19877	CS0	ZZ1	0
19878	CS0	ZZ1	0
19879	CS0	ZZ1	0
19880	CS0	ZZ1	0
19881	CS0	ZZ1	0
19882	CS0	ZZ1	0
21193	CL2	SPD	0
21194	CL2	SPD	0

13:14:09

WARNING - ZERO OR MISSING DIVISION RANK IN WORKFUNC TABLE

<u>WPNUM</u>	<u>DISTRICT</u>	<u>DIVNAM</u>	<u>DIVRANK</u>
19872	CS0	331	0

13:14:26

WARNING - ZERO OR MISSING OCE RANK IN WORKFUNC TABLE

<u>WPNUM</u>	<u>DISTRICT</u>	<u>DIVNAM</u>	<u>OCE RANK</u>
--------------	-----------------	---------------	-----------------

-WARNING- No rows exist or satisfy the specified clause.



## LWD Lower Mississippi Valley Division

[illegible]

FY 1994  
Division Feature Cost Code Cost Summary Report  
Operations and Maintenance, General Appropriation  
10/07/92 13:16:32

RED Missouri River Division

	ALLSUP	OPER. CUT PROPOSED BY MAJ(CU)	SAVING	FY 1994 DIVISION REQUIRE	BAACOP	BLMPC02	BLMPC05
01 LOCKS, DAMS AND RESERVOIRS	0	0	4,001	4,001	4,001	0	0
02 BUILDINGS, GROUNDS, EQUIPMENT	0	1,141	0	8,090	8,090	0	0
03 LEVEES, FLOODWALLS, PUMP PLANT	0	0	209	209	209	0	0
04 OPERATION OF POWER PLANT	0	0	6,946	6,946	6,946	0	0
05 NATURAL RESOURCE MANAGEMENT	0	2,329	0	6,049	6,049	0	0
06 RECREATION MANAGEMENT	450	1,220	0	16,040	16,040	0	0
07 SURVEYS, INSPECTIONS AND STUDIES	0	0	5,007	5,007	5,007	0	0
09 WATER CONTROL MANAGEMENT	0	0	8,732	8,732	8,732	0	0
10 INSPECTION OF COMPLETED WORKS	0	128	0	716	716	0	0
11 REAL ESTATE ACTIVITIES - INSPECTIONS, OUTBANDS,	0	0	0	3,010	3,010	0	0
13 CORA ACTIVITIES	0	0	0	98	98	0	0
16 LAW ENFORCEMENT	0	25	1,029	1,029	1,029	0	0
SUBTOTAL OPERATIONS	450	4,095	26,004	60,847	60,847	0	0
20 LANDS & DAMAGES	0	0	0	617	0	0	0
21 DAM & RESERVOIRS	0	0	0	1,196	0	0	0
23 POWER PLANTS	0	0	0	14,670	0	0	0
24 NATURAL RESOURCE FACILITIES	0	0	0	608	0	0	0
25 ROADS, RAILROADS, BRIDGES	0	0	0	346	0	0	0
29 RECREATION FACILITIES	0	0	0	1,051	0	0	0
30 PERMANENT OPERATION EQUIPMENT	0	0	0	334	0	0	0
31 BANK STABILIZATION	0	0	0	1,885	0	0	0
32 BUILDINGS, GROUNDS, UTILITIES	0	0	0	305	0	0	0
33 CHANNELS AND CANALS	0	0	0	1,005	0	0	0
SUBTOTAL MAINTENANCE	0	0	0	22,985	0	0	0
Total	1,300	4,095	26,004	83,832	60,847	0	0

LHD Lower Mississippi Valley Division		FY 1994 Division Feature Cost Code Detail Report Operations and Maintenance, General Appropriation 10/07/92 13117125				
		ALLOW	OPER. COST POSTPONED BY ASAC(CU)	BAREPA	FY 1994 DIVISION REQUEST	
01.1	LOCK OPERATIONS	14,353				BLUP9305
01.2	DAM OPERATIONS	5,434				
01.3	RESERVOIR OPERATIONS	410				
02.1	OPERATION OF SERVICE FACILITIES - ROADS AND BRIDGES	136				
02.2	OPER. OF SERVICE FACILITIES - BLUAG, GROUNDS & UTIL	2,482				
02.3	OPERATION OF SERVICE FACILITIES - FISH. OPER. EQUIP	1,333				
03.1	OPERATION OF LEVEES AND FLOODWALLS	29				
03.2	OPERATION OF PUMPING PLANTS	360				
04	OPERATION OF POWER PLANT	1,709				
05.1	WMT OF NATURAL RESOURCES EXCLUDING FISH HATCHERIES	1,466				
05.4	WMT OF ARCHAEOLOGICAL & CULTURAL RESOURCES	640				
05.5	MANAGEMENT OF WILDLIFE MITIGATION FEATURES	8				
06.1	WMT OF RECREATION AREAS & FACILITIES	11,367				
06.2	OPERATION OF VISITOR CENTERS	237				
06.3	WMT OF RECREATION AREAS & FACILITIES USING SUPP	100				
06.4	MASTER PLANNING	264				
07.11	PROJECT CONDITION SEGMENT SURVEYS	6,042				
07.12	ENVIRONMENT RESEARCH & MONITORING STUDIES	489				
07.21	INSTRUMENTATION	201				
07.22	PERIODIC INSPECTIONS & CONT. EVALUATION DATA GATHER	1,189				
07.23	PERIODIC INSPECTIONS	153				
07.24	PERIODIC INSPECTION REPORTING	126				
07.43	DAM FAILURE EMERGENCY PLANNING	7				
07.53	OTHER CONB & OPER STUDIES IN SUPPORT OF CON	140				
07.6	HYDRAULIC MODEL STUDIES	32				
09.1	WATER CONTROL MANAGEMENT-DATA COLLECTION/PROCESSING	2,491				
09.2	WATER CONTROL MANAGEMENT-WATER CONTROL ANALYSIS	1,001				
09.3	WATER CONTROL MANAGEMENT-WATER QUALITY	295				
10.11	INSPECTION OF COMPLETED WORKS	1,045				
10.22	ENERGY CONSERVATION REPORTS	14				
11	REAL ESTATE ACTIVITIES - INSPECTIONS, OUTGOINGS, AU	1,314				
13	OSHA ACTIVITIES	40				
16	LAW ENFORCEMENT	578				

## LWD Lower Mississippi Valley Division

Division Feature Cost Code Detail Report  
Operations and Maintenance, General Appropriation  
10/07/92 13117125

FY 1994

	ALLOW	OPER. COST PROPOSED BY ASAC(S)	BASBP4	FY 1994 DIVISION REQUEST	BASBP	BLM97302	BLM97303
SUBTOTAL OPERATIONS	54,721	0	0	0	0	0	0
20 LANDS & DAMAGES	199	0	0	0	0	0	0
20.4 LANDS & DAMAGES - ENCROACHMENTS	94	0	0	0	0	0	0
20.7 LANDS & DAMAGES - TIMBER HARVESTS	90	0	0	0	0	0	0
20.8 BOUNDARY MAINTENANCE, RECTIFICATION AND MAINTENANCE	272	0	0	0	0	0	0
21.11 DAM MAINTENANCE	166	0	0	0	0	0	0
21.13 CORRECT. OF DAM FACILITIES ON DAM STRUCTURES	3	0	0	0	0	0	0
21.16 ENVIRONMENTAL COMPLIANCE FOR DAM MAINTENANCE	25	0	0	0	0	0	0
22.1 LOCK AND SALT WATER CONTROL STRUCTURE MAINTENANCE	7,612	0	0	0	0	0	0
23.1 SCHEDULED POWER PLANT MAINTENANCE	1,208	0	0	0	0	0	0
23.2 NON-SCHEDULED POWER PLANT MAINTENANCE	1,141	0	0	0	0	0	0
23.4 ENVIRONMENTAL COMPLIANCE - POWER PLANT	20	0	0	0	0	0	0
24.1 MAINT. OF NATURAL RESOURCE FACILITIES	220	0	0	0	0	0	0
24.3 MAINT. OF ARCHEOLOGICAL AND CULTURAL BUILDING SITES	45	0	0	0	0	0	0
24.4 ENVIRONMENTAL COMPLIANCE - NATURAL RESOURCE MAINT	4	0	0	0	0	0	0
25.1 ROAD AND BRIDGE MAINT. - NON-RECREATIONAL	147	0	0	0	0	0	0
26.1 BREAKWATER, JETTY, AND SCUMMALL MAINT.	100	0	0	0	0	0	0
27.1 LEVEE, FLOODWALLS, MURICANE CARRIERS AND OTHER FLO	707	0	0	0	0	0	0
29.1 MAINT. OF RECREATION FACILITIES	185	0	0	0	0	0	0
29.11 ENVIRONMENTAL COMPLIANCE - RECREATION MAINTENANCE	544	0	0	0	0	0	0
29.2 ROAD AND BRIDGE MAINT. - RECREATIONAL	264	0	0	0	0	0	0
29.3 EROSION CONTROL IN RECREATION AREAS	99	0	0	0	0	0	0
29.4 MAINT. OF VISITOR CENTERS	1,400	0	0	0	0	0	0
29.9 MAINT. OF RECREATION FACILITIES USING GRUP	19	0	0	0	0	0	0
30.1 PERM OPER EQUIP-WATER CONTROL DATA SYSTEMS EQUIP	349	0	0	0	0	0	0
30.2 MAINT. OF PERM OPER EQUIP-REGULAR	2,105	0	0	0	0	0	0
31 BANK STABILIZATION	1,316	0	0	0	0	0	0
32.1 MAINT. OF NON-RECREATIONAL BUDS, GROUNDS AND UTILI	84,896	0	0	0	0	0	0
33.11 DREDGING - NAVIGATION	2,209	0	0	0	0	0	0
33.21 NON-DREDGING NAVIG. CHANNEL MAINT., GRASSING, CLEAR	6,702	0	0	0	0	0	0
33.22 MAINT. OF REVENIENTS, GROINS OR DICES TO CONTROL CU		0	0	0	0	0	0

FY 1994  
 Division Future Cost Code Detail Report  
 Operations and Maintenance, General Appropriation  
 10/07/92 13:17:26

LMD Lower Mississippi Valley Division

33.3 DREDGED MATERIAL DISPOSAL FACILITY CONSTRUCT. AND M  
 SUBTOTAL MAINTENANCE

ALLBUD	OPER. CUT PROPOSED BY ASR(CU)	BASEPM	FY 1994 DIVISION REQUEST	BASEOP	BLUD9302	BLUD9305
250	0	0	0	0	0	0
112,730	0	0	0	0	0	0
Total	0	0	0	0	0	0

FT 1994  
 Division Feature Cost Code Detail Report  
 Operations and Maintenance, General Appropriation  
 10/07/92 15:17:25

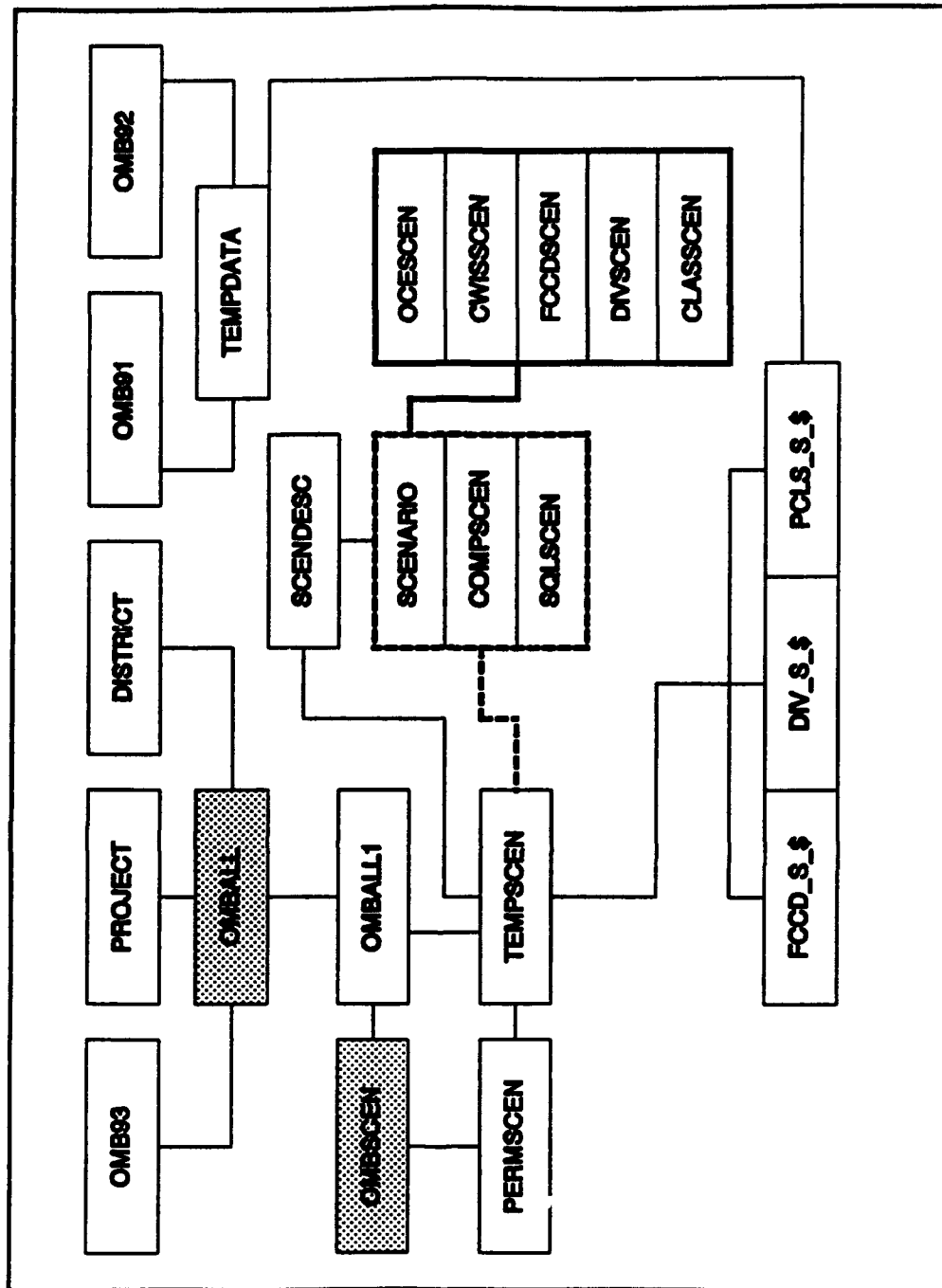
MOB Missouri River Division

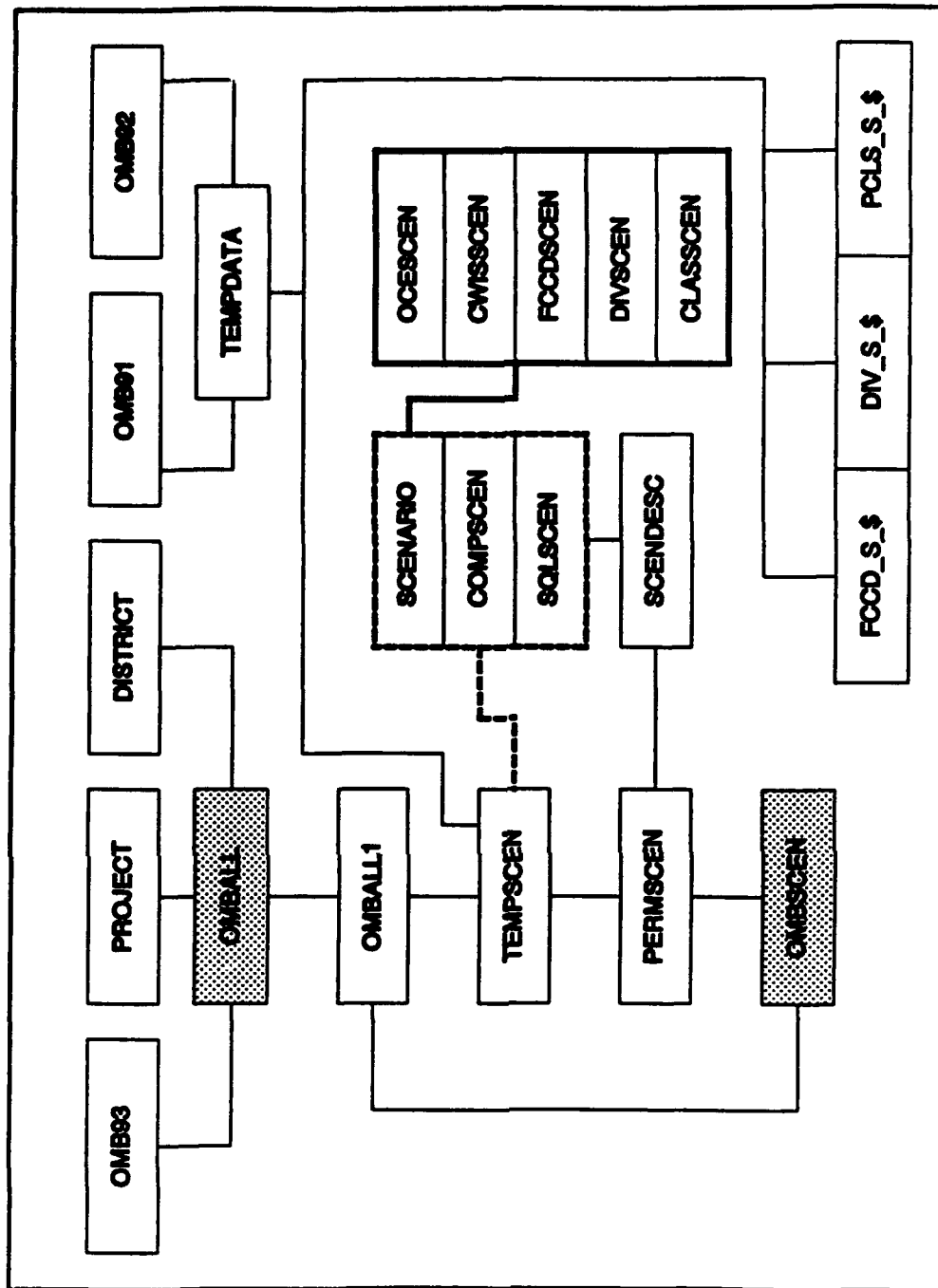
	ALLGRP	OPER. CUT PROPOSED BY ABA(CN)	BA4954	FT 1994 DIVISION REQUEST	BA4950P	BA49502	BA49505
01.2 DAM OPERATIONS	2,495	0	0	0	0	0	0
01.3 RESERVOIR OPERATIONS	1,386	0	0	0	0	0	0
02.1 OPERATION OF SERVICE FACILITIES - BODIES AND BUILDINGS	1,806	0	0	0	0	0	0
02.2 OPER. OF SERVICE FACILITIES - BLDGS, GROUNDS & UTIL	4,247	0	0	0	0	0	0
02.3 OPERATION OF SERVICE FACILITIES - PERM. OPER. EQUIP	3,922	0	0	0	0	0	0
03.1 OPERATION OF LEVEES AND FLOODWALLS	58	0	0	0	0	0	0
03.2 OPERATION OF PUMPING PLANTS	151	0	0	0	0	0	0
04 OPERATION OF POWER PLANT	4,966	0	0	0	0	0	0
05.1 MGMT OF NATURAL RESOURCES EXCLUDING FISH HATCHERIES	4,470	0	0	0	0	0	0
05.4 MGMT OF ARCHAEOLOGICAL & CULTURAL RESOURCES	921	0	0	0	0	0	0
05.5 MANAGEMENT OF WILDLIFE MITIGATION FEATURES	5	0	0	0	0	0	0
06.1 MGMT OF RECREATION AREAS & FACILITIES	12,975	0	0	0	0	0	0
06.2 OPERATION OF VISITOR CENTERS	753	0	0	0	0	0	0
06.3 MGMT OF RECREATION AREAS & FACILITIES USING GRUP	371	0	0	0	0	0	0
06.4 MASTER PLANNING	771	0	0	0	0	0	0
07.11 PROJECT CONDITION AND INVEST SURVEYS	547	0	0	0	0	0	0
07.21 INSTRUMENTATION	2,206	0	0	0	0	0	0
07.22 PERIODIC INSPECTIONS & CONT. EVALUATION DATA GATHER	336	0	0	0	0	0	0
07.23 PERIODIC INSPECTIONS	276	0	0	0	0	0	0
07.24 PERIODIC INSPECTION REPORTING	240	0	0	0	0	0	0
07.41 DAM SAFETY STUDIES	54	0	0	0	0	0	0
07.42 DAM FAILURE EMERGENCY PLANNING	377	0	0	0	0	0	0
07.53 OTHER COND & OPER STUDIES IN SUPPORT OF CON	4,504	0	0	0	0	0	0
09.1 WATER CONTROL MANAGEMENT-DATA COLLECTION/PROCESSING	3,976	0	0	0	0	0	0
09.2 WATER CONTROL MANAGEMENT-WATER CONTROL ANALYSIS	1,172	0	0	0	0	0	0
09.3 WATER CONTROL MANAGEMENT-WATER QUALITY	576	0	0	0	0	0	0
10.11 INSPECTION OF COMPLETED WORKS	12	0	0	0	0	0	0
10.22 ENERGY CONSERVATION REPORTS	2,914	0	0	0	0	0	0
11 REAL ESTATE ACTIVITIES	72	0	0	0	0	0	0
13 OTHER ACTIVITIES	1,029	0	0	0	0	0	0
16 LAW ENFORCEMENT							

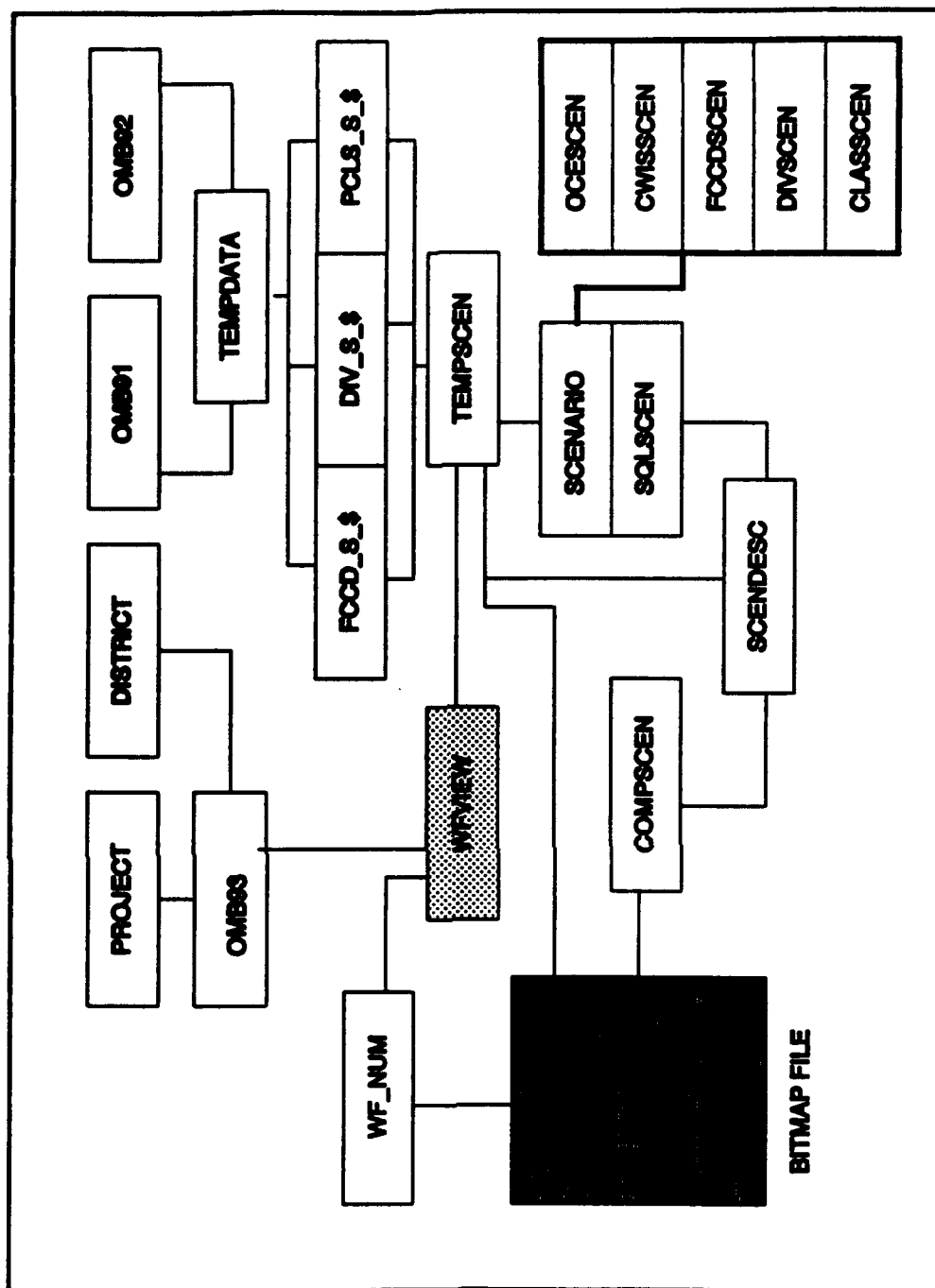
MO Missouri River Division		FY 1994 Division Feature Cost Code Detail Report Operations and Maintenance, General Appropriation 10/07/92 13:17:27							
		ALLSUP	OPER. CUT PROPOSED BY ASA(CU)	BASBP4	FY 1994 DIVISION REQUEST	BASBP	BUD9902	BUD9903	
	SUBTOTAL OPERATIONS	59,179	0	0	0	0	0	0	
20	LANDS & DAMAGES	405	0	0	0	0	0	0	
20.6	LANDS & DAMAGES - ENCROACHMENTS	212	0	0	0	0	0	0	
21.11	DAM MAINTENANCE	5,125	0	0	0	0	0	0	
21.15	INSTRUMENTATION ON DAM STRUCTURES	85	0	0	0	0	0	0	
23.1	SCHEDULED POWER PLANT MAINTENANCE	8,474	0	0	0	0	0	0	
23.2	NON-SCHEDULED POWER PLANT MAINTENANCE	7,966	0	0	0	0	0	0	
23.6	ENVIRONMENTAL COMPLIANCE - POWER PLANT	146	0	0	0	0	0	0	
24.1	MAINT. OF NATURAL RESOURCE FACILITIES	952	0	0	0	0	0	0	
24.4	ENVIRONMENTAL COMPLIANCE - NATURAL RESOURCE MAINTEN	344	0	0	0	0	0	0	
25.1	ROAD AND BRIDGE MAINT. - NON-RECREATIONAL	109	0	0	0	0	0	0	
29.1	MAINT. OF RECREATION FACILITIES	870	0	0	0	0	0	0	
29.11	ENVIRONMENTAL COMPLIANCE - RECREATION MAINTENANCE	72	0	0	0	0	0	0	
29.5	MAINT. AND PURCHASE OF PERM. OPER. EQUIPMENT FOR RE	125	0	0	0	0	0	0	
30.1	PERM OPER EQUIP-WATER CONTROL DATA SYSTEMS EQUIP	209	0	0	0	0	0	0	
30.2	MAINT. OF PERM OPER EQUIP-REGULAR	1,865	0	0	0	0	0	0	
31	BANK STABILIZATION	385	0	0	0	0	0	0	
32.7	ENVIRONMENTAL COMPLIANCE - BUILDINGS, GROUNDS AND U	1,865	0	0	0	0	0	0	
33.22	MAINT. OF REVENUE, GROUNDS OR BICES TO CONTROL CU	27,069	0	0	0	0	0	0	
	SUBTOTAL MAINTENANCE								
	Total	86,248	0	0	0	0	0	0	

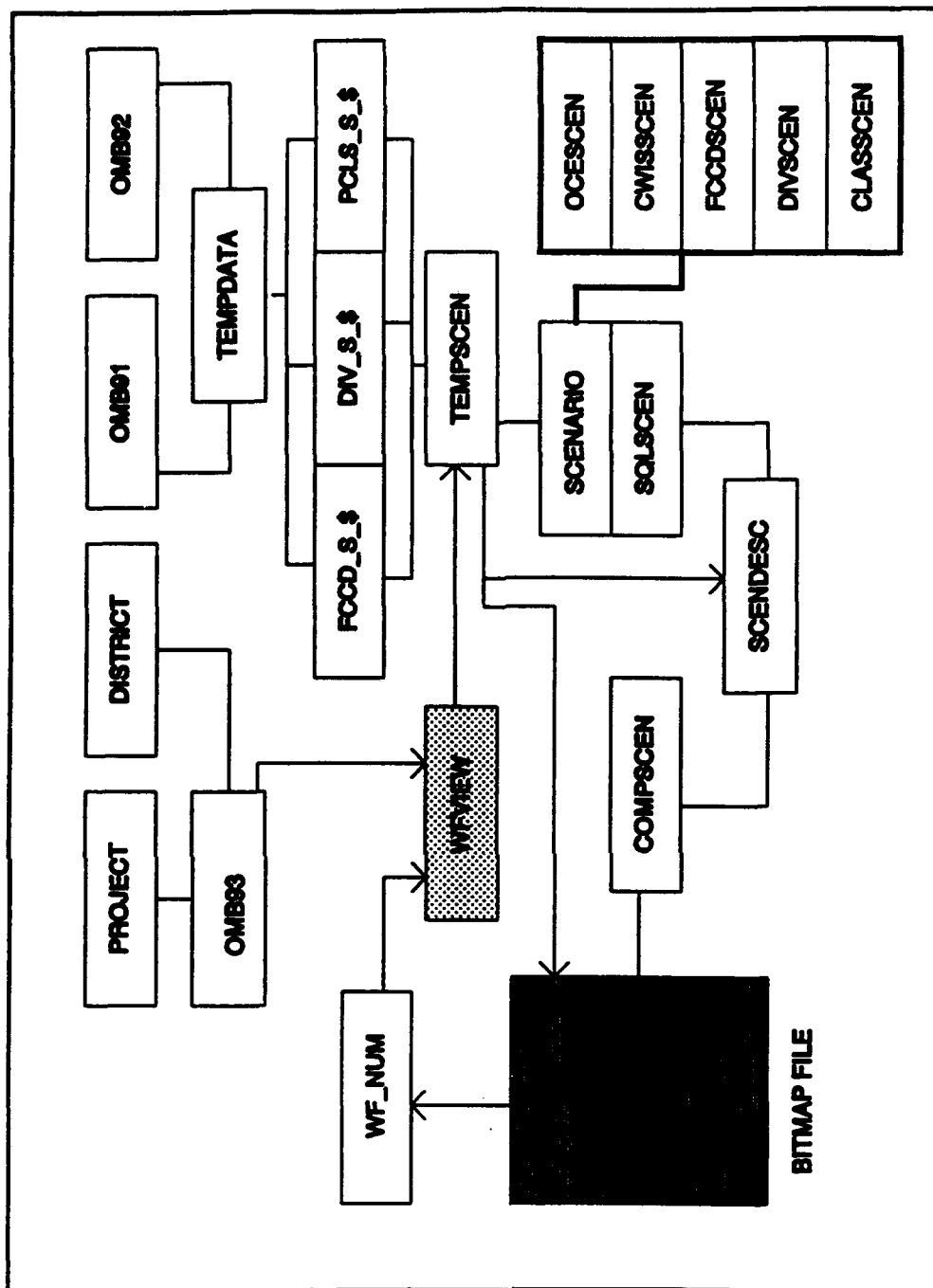
# **Appendix G Presentation Materials**

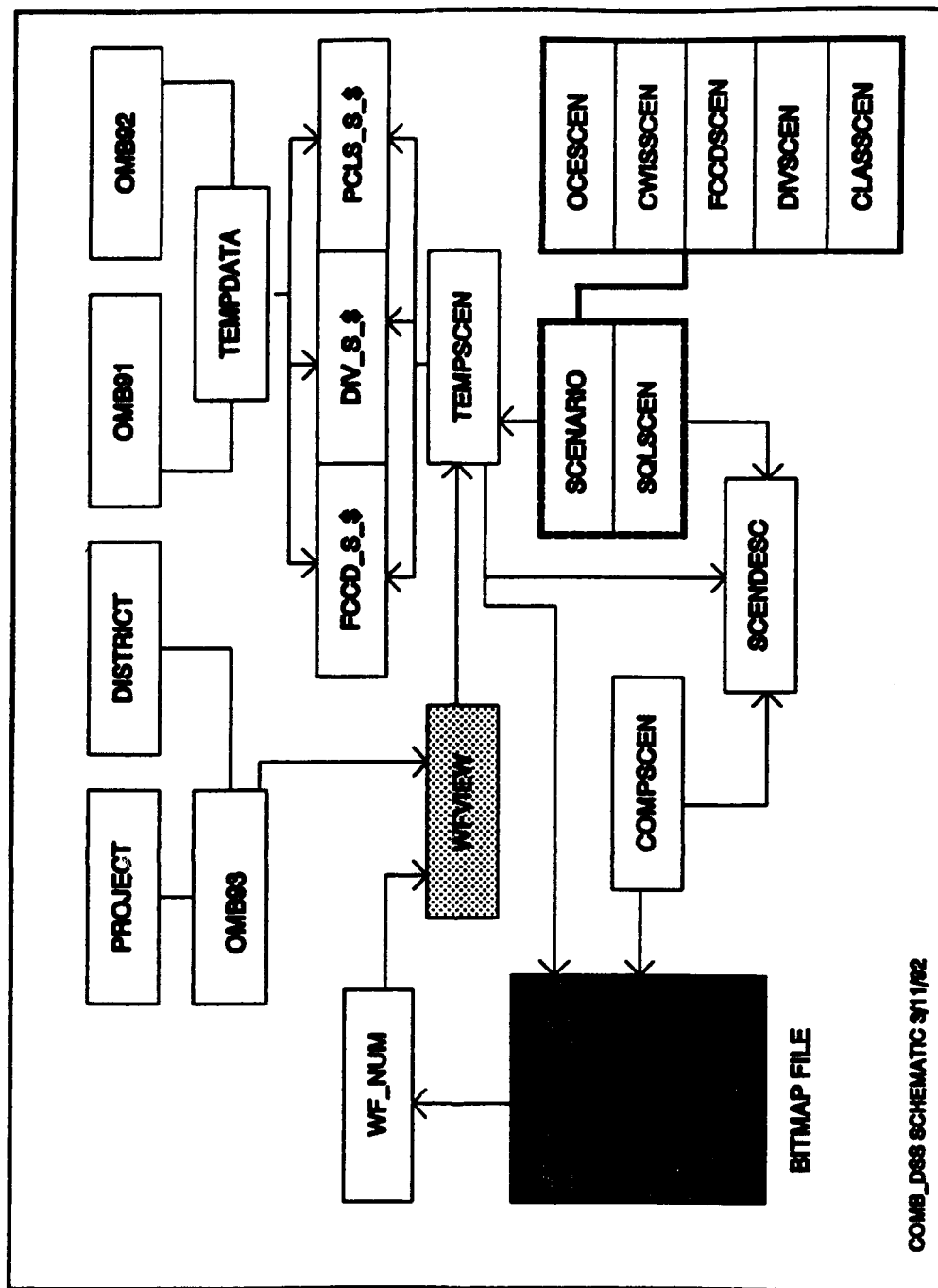
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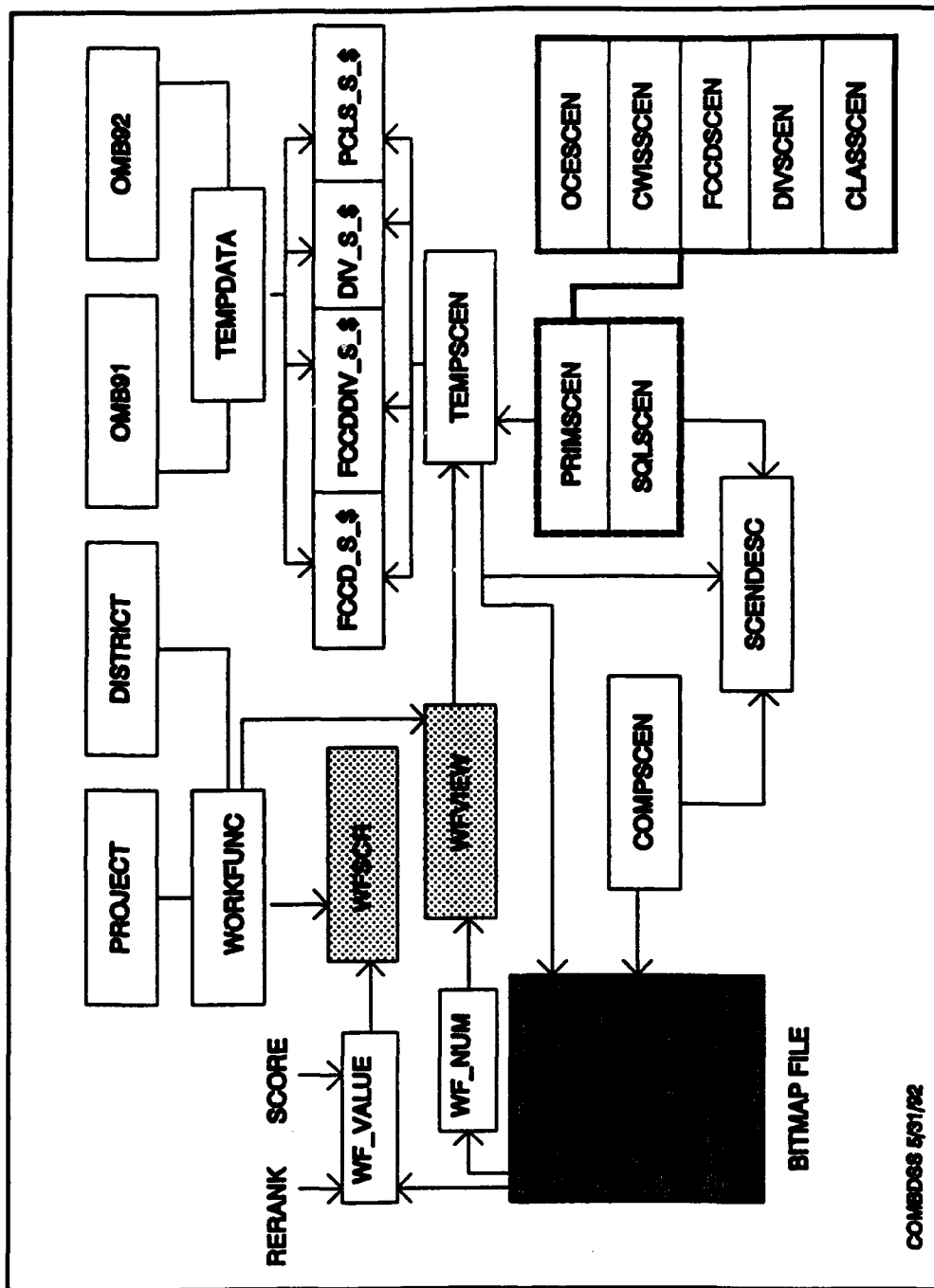












## Rank Generation Process: Evaluate Unique Ranking

- LOOK FOR "OUT-OF-ORDER" DIVISION RANKS

Order WF's by Division, Unique Rank, Division Rank

Examine list for 'out-of-order' division ranks in Division

Unique Rank	Division Rank
1	3
2	5
3	4
4	6
5	7



- GRAPHICAL DISPLAYS

- Dollars vs. rank, for each Division



- Total Dollars vs. rank



## **Scenario Definition Types and Ranking Algorithms**

- **PARTIONING SCENARIOS**

**Divide WF's into near exclusive groups (disjoint sets)**

**Assign Scenario Scores to Reflect Overall Desirability**

**Use Best Score Algorithm**

- **STRENGTHS SCENARIOS**

**Generate groups of WF's with desirable properties (e.g. environmental enhancement, recreation, health and safety)**

**Assign Scenario Scores to Reflect Component Importance**

**Use Additive Score Algorithm**

## **Rank Generation Process: Overall**

- **Exploration**

### **Develop Scenarios**

### **Evaluate For Financial Impacts**

- **Develop/Choose Ranking Scenarios**

- **Assign Scores to Scenario**

- **Assign Scores to Work Functions (SS-WFS algorithm)**

- **Develop Unique Rank for Work Functions (WF-UR algorithm)**

- **Evaluate Resultant Ranking**



## Rank Generation Process: WF Bitmap Creation

Work Functions

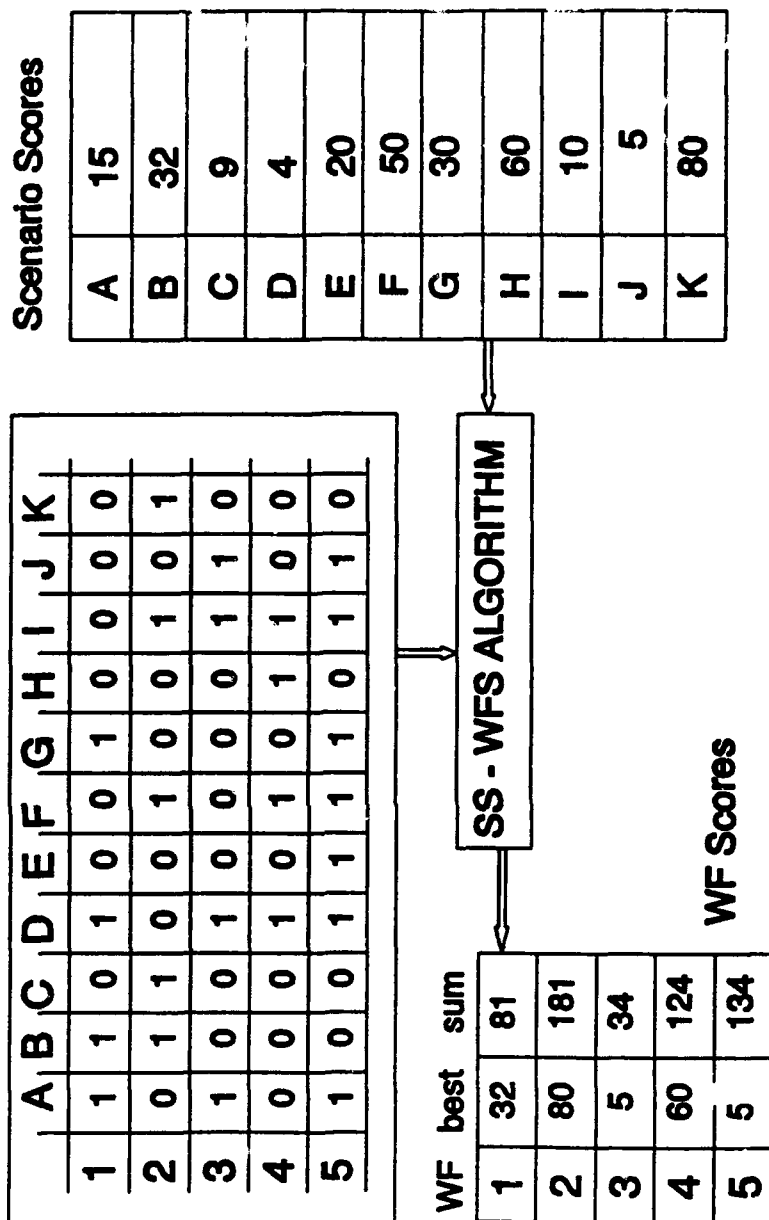
Construct Scenarios

Apply Scenarios to Work Functions



	A	B	C	D	E	F	G	H	I	J	K
1	1	1	0	1	0	0	1	0	0	0	0
2	0	1	1	0	0	1	0	0	1	0	1
3	1	0	0	1	0	0	0	0	1	1	0
4	0	0	0	1	0	1	0	1	1	0	0
5	1	0	0	1	1	1	1	1	0	1	0

## Rank Generation Process: WF Score Generation

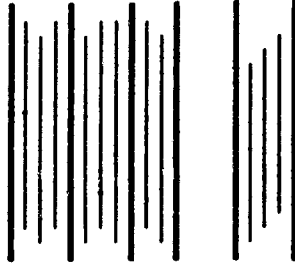


## **Rank Generation Process: Unique WF Rank**

- Order WF's by WF Score

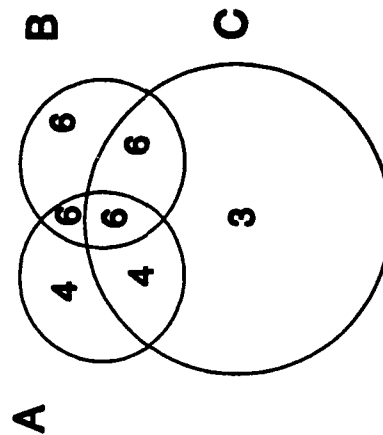
### **Rank Generation Process: WF Unique Rank**

- Order WF's by WF Score  
(Indifferent to ordering within Score)
- Within Score, Order by Other Factors  
(e.g. Division Rank)
- Within-Score Ordering Algorithm
  - Order WF's by Division Rank, by Division
  - "Deal off the Top"
  - Randomize Order of Divisions for each deal

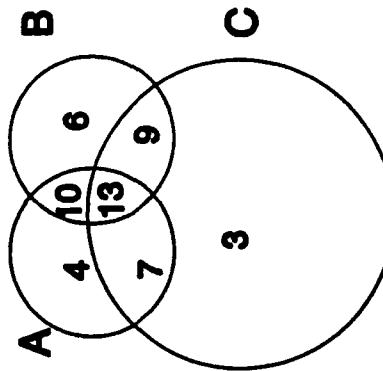


# Scenario Score to Work Function Score Algorithm

Option 1: Best Score



Option 2: Additive Score



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6. AUTHOR(S) Craig A. Strus, Russ E. Robinson, Richard M. Males Michael R. Walsh, Connie L. Raaymakers, Edward J. Japel				
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13. ABSTRACT (Maximum 200 words)  This report describes the development, testing, and evaluation of the Corps of Engineers Operation and Management Budget Decision Support System (COMB_DSS) developed under the Improvement of Operations and Management Techniques (IOMT) Research Program. This decision support application was designed to assist the Operations, Construction and Readiness (OCR) Division, Headquarters, U.S. Army Corps of Engineers (HQUSACE), with analysis of yearly Operations and Maintenance (O&M) budget submittals by the Corps Divisions. The report discusses the budget process for O&M project funding, the analysis needs of management at HQUSACE, a detailed description of general decision support system design, and the prototype design for assisting in the decision making process at HQUSACE. Decision support systems are computer-based information systems that typically contain four components: a database for storing large volumes of descriptive data, a user interface such as menus for information management, an analysis component for performing operations on the data, and report generation capability. The COMB_DSS contains five analysis capabilities for assisting in the O&M budget preparation: a scenario analyst, a financial analyst, a rank generator, a criteria analyst, and a statistical analyst. The testing and evaluation of the COMB_DSS at HQUSACE during the budget formation process is described along with recommendations for future improvements.				
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